# Smithsonian

*April 1984*

A Whistler celebration (p.56 );
here, the winsome *Milly Finch*

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*April 1984*

# Smithsonian

Volume 15, Number 1

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Smithsonian (ISSN 0037-7333) is published monthly
by the Smithsonian Associates, 900 Jefferson Drive, Washington, DC 20560.
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Subscription price $17 a year in U.S. possessions, $25 elsewhere.
80 percent of dues is designated for magazine subscription.
Single copy price $2. Second-class postage paid at Washington, DC.
Editorial offices, 900 Jefferson Drive, Washington, DC 20560.
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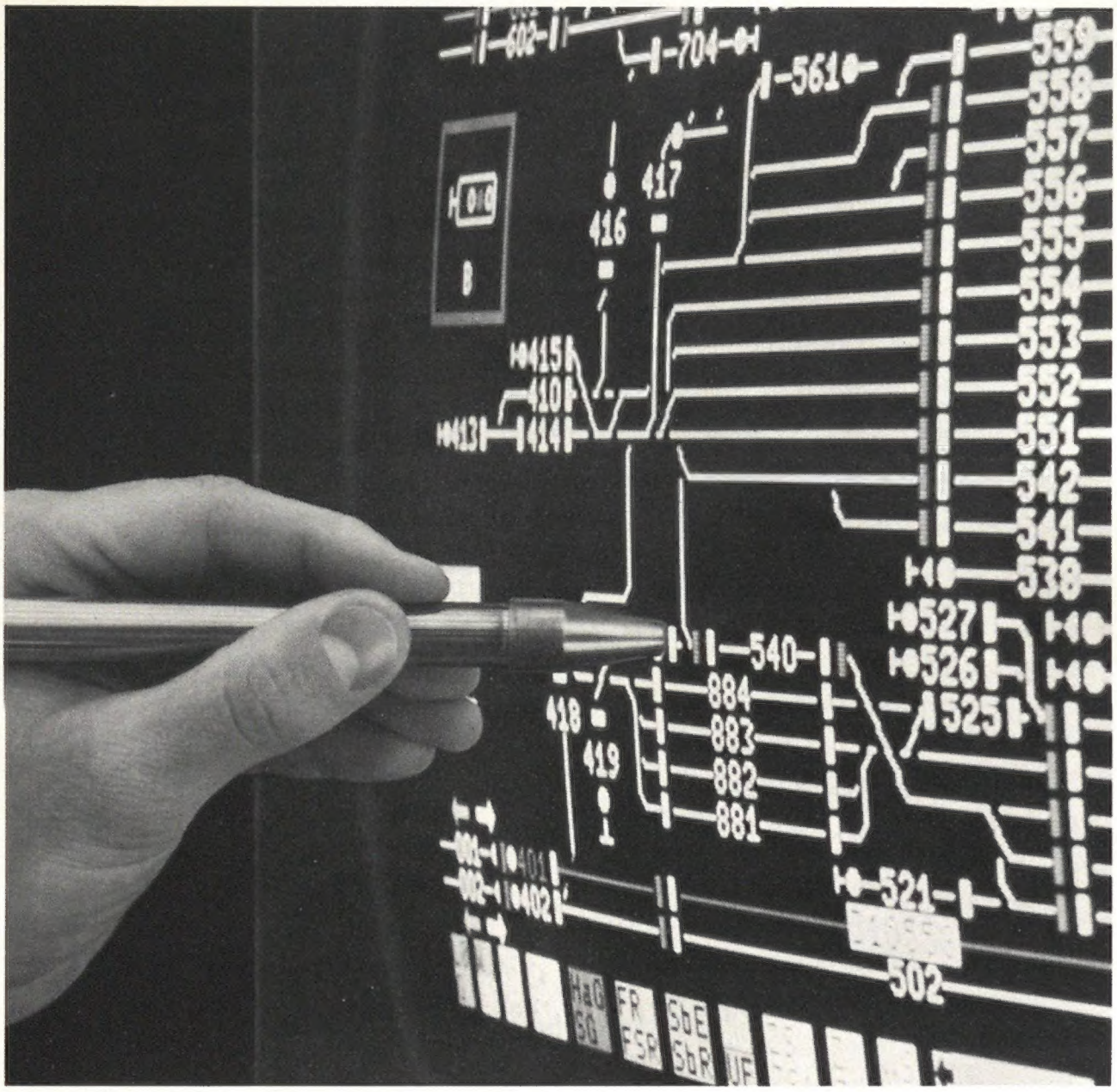


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*Shown smaller than actual height of 8½".*

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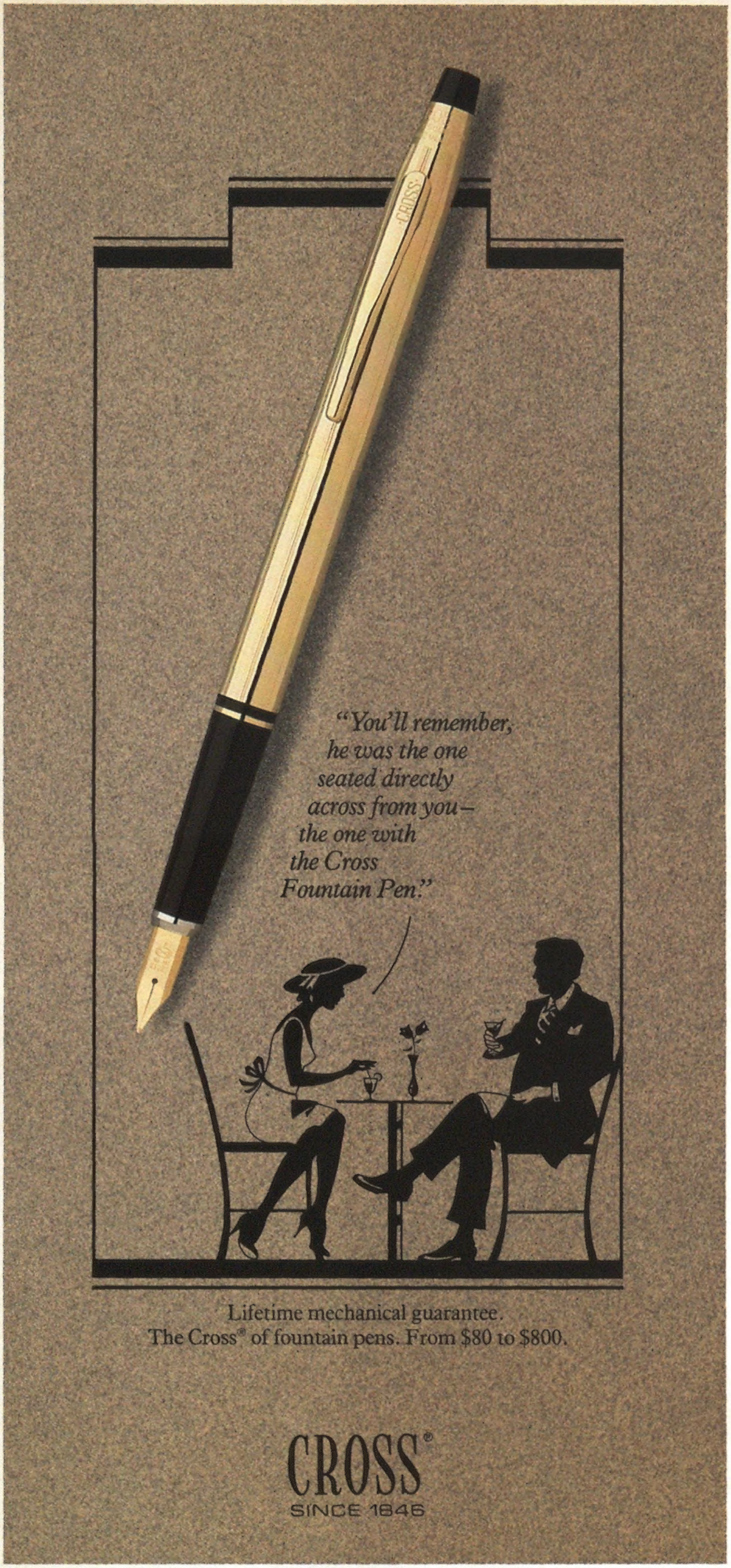
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# Holland America 1985 World Cruise

# The Logical Suspect

*Soot particle growth as it takes place in wood-burning fireplaces, diesel engines, and industrial furnaces, has been attributed to a complex set of interdependent chemical reactions. A researcher at the General Motors Research Laboratories has demonstrated that the decomposition of a single species is primarily responsible.*

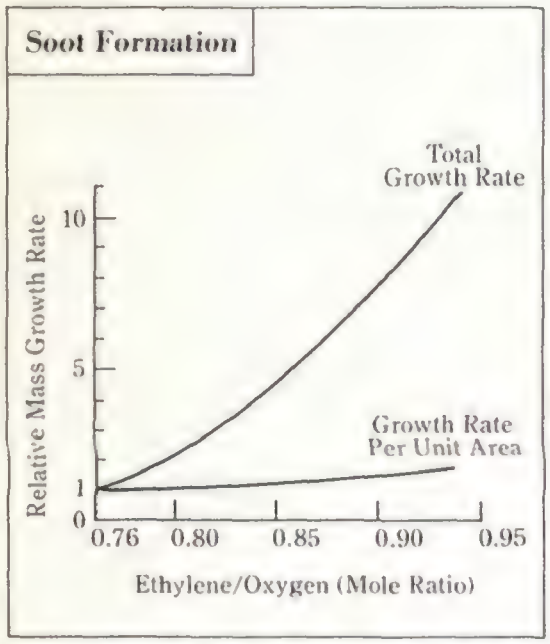
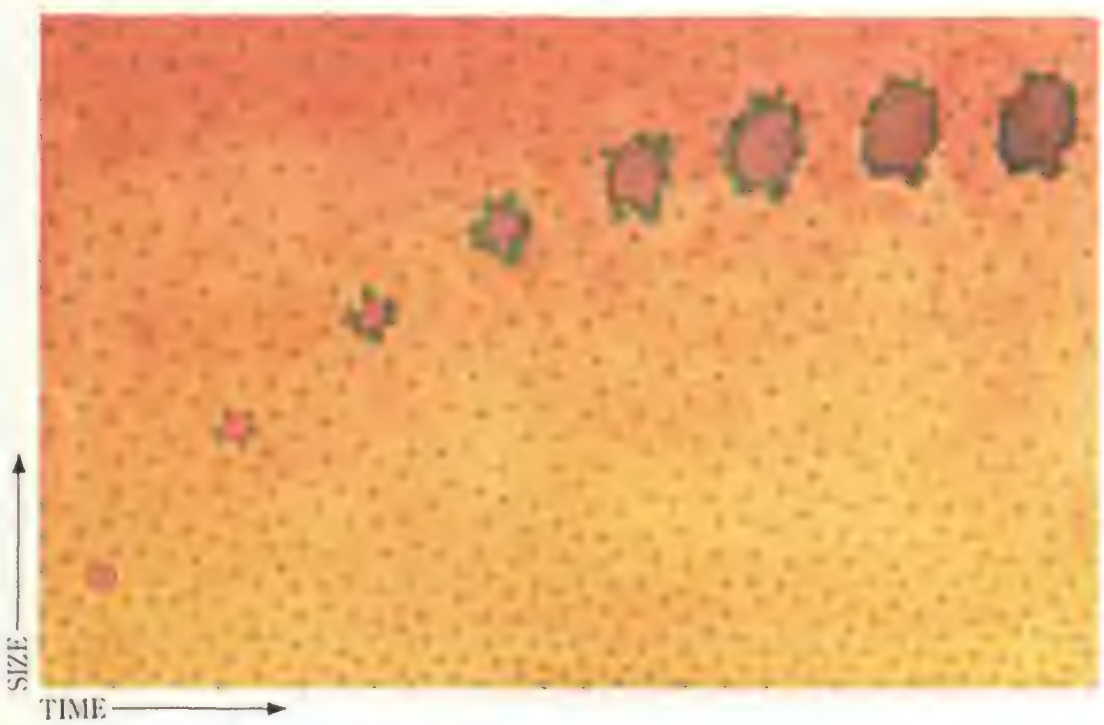



*Figure 1: Total growth rate contrasted with growth rate per unit area plotted as a function of ethylene/oxygen mole ratio measured at a given height above the burner face.*

*Figure 2: Artist's rendition of the surface growth of a single soot particle by the incorporation of acetylene molecules.*




SOOT FORMATION may be divided into two stages. Microscopic soot particles are generated in the "inception" stage. They reach full size in the "growth" stage, which accounts for more than 95% of their final mass. Most scientific exploration has concentrated on particle inception which, despite all the effort, remains unexplained. Dr. Stephen J. Harris, a physical chemist at the General Motors Research Laboratories, has reversed traditional priorities. Combining experiment with logic, he has formulated the first quantitative explanation of the growth stage in soot formation.

Dr. Harris arrived at his mechanism through an elaborate process of elimination. To focus on the chemistry of soot growth, he began by eliminating from his investigation the complexities introduced by turbulence and mixing. He limited his research to premixed, ethylene/oxygen, laminar flames with one-dimensional flow.

Previous descriptions in the literature told him that two processes take place simultaneously during growth. Incipient particles collide and coalesce into larger particles, while growing at the same time by incorporating hydrocarbon molecules from the burned gases.

The first process reduces total surface area without changing total mass, while the second, called "surface growth," increases both total surface area and total mass. Hence, the increase in the total mass of soot can be entirely attributed to surface growth.

Dr. Harris set out to identify the hydrocarbon molecules—or "growth species"—responsible for surface growth. Increasing by increments the richness of the flame, he made the key discovery that although the total mass growth rate (gm/sec) increases strongly when the ratio of ethylene to oxygen is increased, the mass growth rate per unit surface area ($gm/cm^2/sec$) increases only slightly (see Figure 1). Thus, the controlling variable for how much soot is formed is not the concentration of growth species, but the surface area available for growth.

This finding led him to conclude that richer flames produce more total soot because they gen-

erate more particles in the inception stage. More incipient particles offer greater initial surface area for the incorporation of hydrocarbons.

Since the growth rate per unit area must depend on growth species concentration, this concentration must be similar from flame to flame. Dr. Harris went on to reason that there must either be enough growth species at the outset to account for the total soot growth in the richest flame, or the species must be rapidly formed within the flame from another hydrocarbon present in high enough concentration.

HE NARROWED his search to the four most abundant classes of hydrocarbons found in flames: acetylene, polyacetylenes, polycyclic aromatic hydrocarbons (PAH), and methane. Methane can be eliminated, because its concentration does not decrease as soot is produced. There is not enough PAH to account for soot formation in any flame. Neither of these two hydrocarbons can be readily formed from the other major species present. That left only acetylene and the polyacetylenes.

Acetylene contains enough hydrogen to account for the hydrogen content of soot measured in the early stages of growth. But among the polyacetylenes, only diacetylene could possibly supply enough hydrogen. That left acetylene and diacetylene.

There is more than enough acetylene to account for the mass of soot produced. There is not enough diacetylene, and while diacetylene can be formed from the abundant supply of acetylene, the reported rate of conversion is too slow for diacetylene to play a significant role. That left only acetylene.

Dr. Harris verified that acetylene is the growth species by determining that the slight increase in growth rate per unit area is proportional to the increase in acetylene concentration (see Figure 1). He also found that the rate constant he measured was in agreement with the reported rate constant for the decomposition of acetylene on carbon. These findings confirmed his hypothesis that soot particles grow in flames by the incorporation and subsequent decomposition of acetylene.

"Now that we know how soot grows," says Dr. Harris, "we can examine how it begins with greater understanding. Then, perhaps our knowledge will be complete enough to suggest better ways to reduce soot."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## THE MAN BEHIND THE WORK

Dr. Stephen J. Harris is a Staff Research Chemist at the General Motors Research Laboratories. He is a member of the Physical Chemistry Department.

Dr. Harris graduated from UCLA in 1971. He received his Master's and Ph.D. degrees in physical chemistry from Harvard University. His doctoral thesis concerned Van der Waals forces between molecules. Following his Ph.D. in 1975, a Miller Institute Fellowship brought him back to the University of California, this time at Berkeley, where he spent two years studying laser-induced chemistry. He joined General Motors in 1977.

Dr. Harris conducted his investigation into soot particle growth with the aid of Senior Science Assistant Anita Weiner. His research interests at GM also include the use of laser diagnostic techniques in combustion analysis, with special emphasis on intracavity spectroscopy.

# *The view from the castle*

*The nation's foremost birder has perfected the field guide into the essential tool for understanding the vagaries of nature*

Roger Tory Peterson is a hero to half of America, and certainly to the Smithsonian. His bird paintings will go on view this month at the National Museum of Natural History in an exhibition marking the 50th anniversary of *A Field Guide to the Birds*; on April 26 he will be honored at a dinner in the same museum and in this issue of the magazine you will find an article by him on least terns.

Nominated for a Nobel Peace Prize last year and a recipient of the Presidential Medal of Freedom in 1980, he has played a significant role in this country. Years ago, in the '30s, I remember Roger as an eager visitor to the American Museum of Natural History in New York. He was boning up on birds' shapes and sizes, states of plumage, colors of bills and feet—all in the gradual refining of his unique system of delineating birds and their complicated "field marks" for "birders," as he calls them. These were the few people who compiled "life lists" of the species they had seen, and who later earned the mildly scathing sobriquet of "bird golfers" from one of my less sympathetic European colleagues.

If this all seemed a rather aimless hobby then, it has long since passed out of amateur status. The compiling of data on bird occurrence throughout the North American continent, winter and summer, including migration seasons and other knowledge, has transformed the subject. Now we realize that birds are a real indicator of environmental health. Roger terms birds and their presence or absence a kind of "environmental litmus paper" for the ecologist. Knowledge of birds and their whereabouts and the changes in their patterns of distribution is a key to our understanding of nature and the needs for conservation.

Meanwhile, the Peterson series of field guides—not only to birds but to a host of other natural aggregations in our biological world—goes on and on. They are now published in many languages.

The benign influence of knowing about the *sorts* of nature in all countries is an element in our relations with other peoples—a kind of incentive toward mutual amity, which may well have been the reason for Roger's nomination for the Peace Prize.

From the early days of zealous bird listers, doing it for personal pleasure, to the armchair birder behind his picture window waiting to see who comes to the feeder, we have progressed to the field guide as an essential tool for understanding the vagaries and transitions in nature. Somewhere here lies a key to our future, a hint of things that are to come on this rapidly changing planet.

In my mind's eye I can see Roger as a perennial Norseman, striding along cliff edges or on rocky promontories washed by pounding surf, with eiders and harlequin ducks just at the edge of the breakers. White hair tossing in the wind, binoculars clutched at the ready, he represents an undying enthusiasm for all the works of nature.

Let no statesmen, economists and other heavy thinkers scoff. Roger Tory Peterson has helped point the way to understanding and to peaceful relations by contemplation of the natural world.

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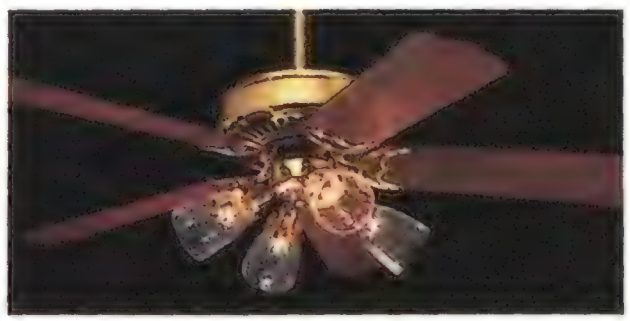

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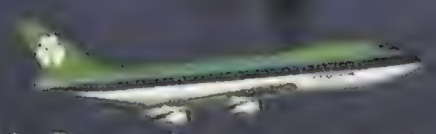

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# *Letters to the Editor*

*The Patriarchs: Abraham, Isaac and Jacob* by Herman Perlman

## *Smithsonian World*

Dear Sir: That fine camel on the cover of your February issue reminded me of a story I read in David Roberts' *Journal.* Roberts was a Scottish painter who traveled in Egypt and the Holy Land in 1838-39. When he returned to England with his sketches, he made drawings which Louis Haghe, lithographer to the Queen, reproduced in lithographic form.

Roberts tells this story: "The Arab says there are a hundred names for God, but the Arab only knows 99 of them, and the camel knows the hundredth, and that is the reason for his look of ineffable superiority."

*B. Holly Higgins*
Ashland, Oregon

## *Carved glass*

Dear Sir: As beautiful as is the work of the Shefts brothers, how could you publish an article on sandblasted carved glass without including my father, Herman Perlman, who has been creating glass art by sandblasting here in the Washington area since the 1940s? Among his works [above] are the glass front doors of the Smithsonian Institution's own Renwick Gallery; other examples are in the White House, Blair House and the Federal Reserve building.

Golda Meir autographed his glass carving of her; it is on display at the B'nai B'rith Museum. A life-size carving of Abraham Lincoln stands in the Lincoln Museum in Hodgenville, Kentucky. At the age of 79 he continues to carve his unique and varied style into glass.

*Marvin Perlman*
Silver Spring, Maryland

## *Computer therapy*

Dear Sir: My work with deaf students and those who will teach and counsel them prompts me to applaud Laura Meyers and Teresa Rosegrant for a philosophy of education that applies far beyond the special circumstances of their work. The use of computers makes the story timely, but their approach is timeless. Good parents and grandparents have always used it.

Children who cannot hear, but can see and move beautifully, communicate and learn at full human speed when someone takes pains to use all that is there and stops pretending that what is not there will come back. I refer especially to a project here that uses dialog journals—informal, daily exchanges in writing between student and teacher, genuinely person-to-person, with the emphasis on what is being communicated rather than on correct, formal writing. It can be about whatever the student wishes to communicate: classroom work, even vacations. It gives the teacher insight into ability beyond what is usually tested and assessed; skills are left to develop as use and practice call for them.

*William Stokoe*
Gallaudet College
Washington, D.C.

Dear Sir: I certainly concur with Laura Meyers' definition of "computer readiness" as "whether or not the professionals have a computer ready that the child can use." By two years of age, virtually any

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child can respond to a wide range of computer activities. We also know that getting the mentally retarded and others to sit, stand and walk as quickly as possible is the key to a series of subsequent developmental areas, including language. Clearly, from that point on, the computer work should enhance the use of latent capacities. I strongly agree with the emphasis on motivation through using what each child *can* do. Also, I would never urge computer play/work without having the teacher present and interacting actively with the child.

*Emily Vargas Adams*, Executive Director
Center for the Development
of Non-Formal Education
Austin, Texas

## *Prolific mustangs*

Dear Sir: The use of chemosterilants as a method of population control for wild horses is only a small part of the much larger issue of their protection and management, an issue that provokes sharp differences of opinion and often acrimonious public debate.

Examined uncritically, such use may well seem a wondrous solution to the "problem" of wild horse "overpopulation." However, it is one about which the American Horse Protection Association and other humane organizations have grave reservations. In addition, it has been seriously questioned by the National Academy of Sciences in its recent final report on *Wild and Free-Roaming Horses and Burros*. The effectiveness of chemosterilants depends on the assumption that dominant stallions are the only male breeding animals—an assumption that does not appear to be true in most horse herds. Sterilization of the dominant stallions also blocks the gene flow from genetically superior animals, to the detriment of the herd.

Behind the humane and practical concerns lies a more fundamental question: is there in fact an overpopulation problem that demands a solution of the sort offered by the chemosterilant researchers? To the Department of the Interior and your author, the answer is yes. However, there is little evidence of generalized, severe degradation of the public lands due to overuse by wild horses.

*Joan R. Blue*, President
American Horse Protection Association
Washington, D.C.

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## *Patent models*

Dear Sir: It is a source of pride to us that ten of the 18 models illustrated in your article about the Cooper-Hewitt's splendid exhibition—the feather renovator, "natural-creeping baby-doll," the parlor skates, egg carton, ship bed, bed-bug trap, floating safe, kitchen cabinet, pigeon starter and portable fire escape—were on loan from our collection and were displayed to the public for the first time in close to a century.

At present we are concentrating all of our efforts on identifying and restoring selected models out of an estimated total of the 30,000 that we own. It is our hope that a larger organization than we will step forward and make it possible for this, the largest collection of U.S. patent models in existence, to be on display once again in or near our nation's capital.
*Cliff Petersen*
Beverly Hills

SMITHSONIAN *regrets that we inadvertently failed to identify the above-named models as belonging to Mr. Petersen's collection.* Ed.

## *Tomorrow's car*

Dear Sir: My normal pleasure in SMITHSONIAN was rudely interrupted by this parade of nightmarish, reptilian designs. Too long have we been subjected to the proliferation of cars on the highways that can only be described as amorphous blobs, utterly devoid of any pretense to grace, beauty or dignity.

What has happened to the aura that surrounded the Rolls-Royce Silver Cloud? Cadillacs, Lincolns, the older Packards and Pierce-Arrows, even smaller cars and sports cars such as the high-wheeled MG had some of this quality.

Admittedly we have to have a degree of streamlining to improve fuel economy. But, as an engineer long experienced in the field of safety, I feel the driver should be seated in an erect yet comfortable position, not reclining under a roof that misses his head by a mere half-inch.
*Allen L. Cobb*
Rochester, New York

## *Chelsea Hotel*

Dear Sir: The account of my father, Edgar Lee Masters, my mother and me at the Hotel Chelsea has a few errors.

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To begin with, my father did not move to New York City from Chicago until 1923, so he could not have moved into the hotel in 1920 as Mr. Thomson says.

Equally erroneous is the claim that my father did not like my mother and had not, until December of 1943, seen her "in years." My parents lived apart for about five years within a marriage that lasted 26. This interim was not a legal separation but one brought about by my mother's determination to become a teacher against my father's objections. However, they saw each other frequently, met regularly for dinner and talked on the telephone all during that period.

On the December night in 1943 when my father's friend, the sculptor Joseph Nicolosi, discovered him at the Chelsea near death from pneumonia, I was only 15 years old and at school several hundred miles away, so could not possibly have been the one who "took him over and delivered him," as Mr. Thomson states. Rather, my father asked Nicolosi to call my mother immediately, hardly the request of a man who didn't like his wife. Nicolosi and my mother delivered him into the care of emergency medical treatment. They saved his life.

*Hilary Masters*
Pittsburgh

## *Boontling*

Dear Sir: Is it really necessary, or excusable, to waste pages of an excellent magazine on a childish article such as this? Most children, at some time or other, invent a secret language, but outgrow it.

Better that you encourage Americans, as members of a world power, to overcome their woeful deficiency in foreign languages.

*Else Geissmar*
Seattle

## *Phenomena*

Dear Sir: Kudos to John Hoke of the National Park Service and his innovative approach to restoring the pond in front of the NPS building. Today's genetic engineers could do much worse than cloning enough John Hokes to fill all the top slots in the NPS as well as the Department of the Interior.

*Clement Lovell*
Freedom, New Hampshire

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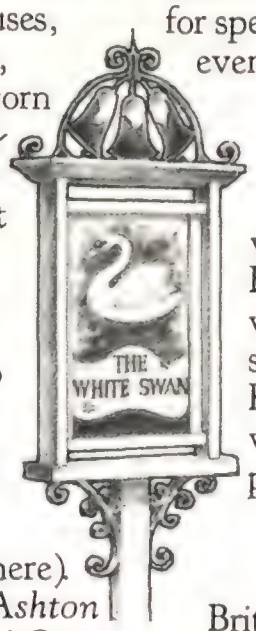


You won't find a lovelier village in all of England than *Little Comberton* (pictured here). It's also within easy reach of *Ashton under Hill, Elmley Castle* and *Overbury*—all enchanting and well worth a visit on the way to Wales.

The village of *Lacock* in Wiltshire is more than just a pretty village. It is, in effect, a museum—almost entirely owned by the National Trust. No building dates from later than the 18th century.

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The typical cottage garden in the typical English village may be planted with daffodils, roses, lily of the valley, peonies, pansies, honeysuckle, sweet pea, foxgloves, delphiniums, hollyhocks, jasmine, pinks and Canterbury bells. And that's just the half of it!

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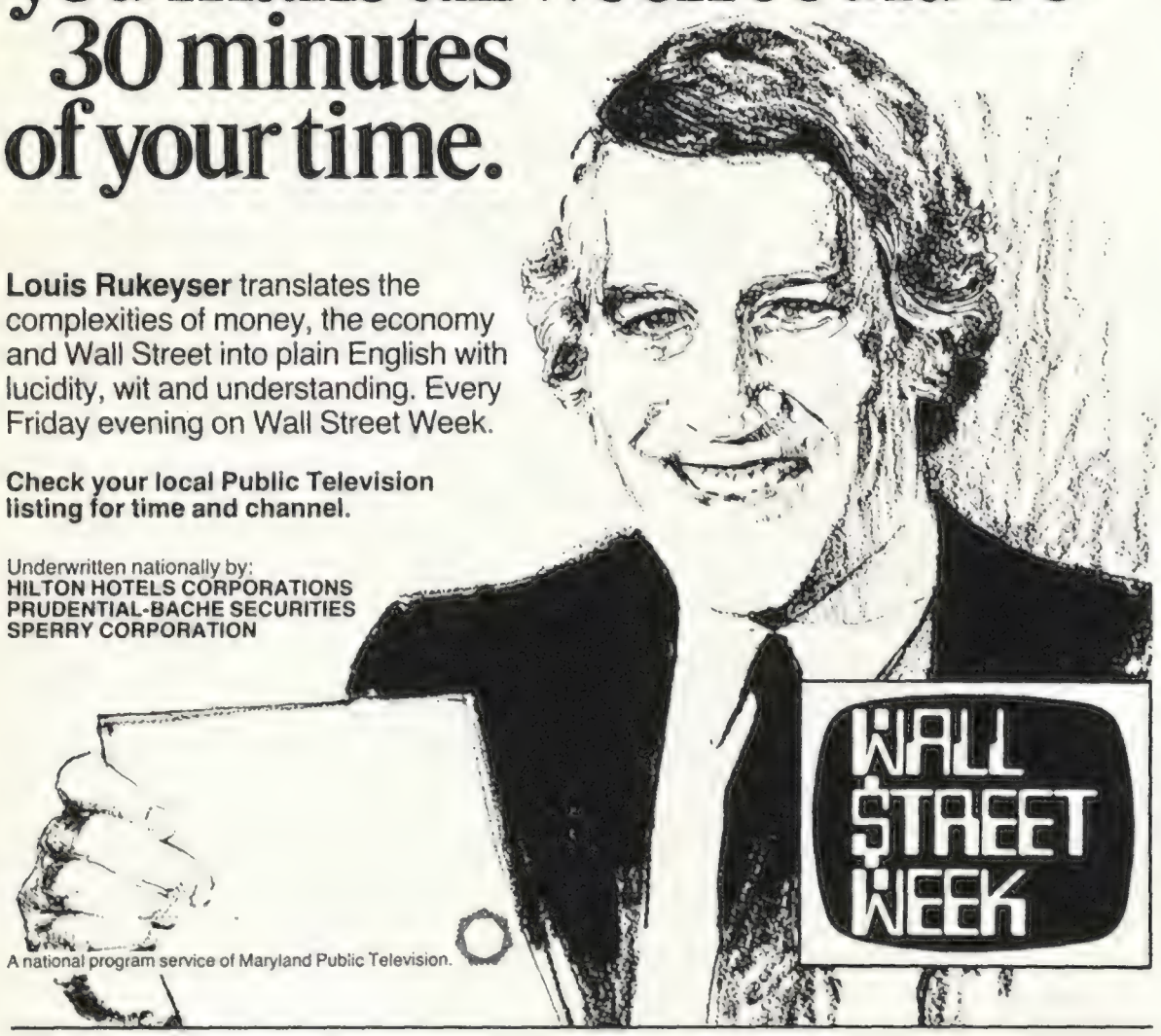


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# *Around the Mall and beyond*

It was on a bitter January day that I was given the Smithsonian museums' visitor census for last year. And now that it's April, and cherry-blossom time in Washington, I have caught up enough to look at the figures: growth! Everything is moving forward and climbing upward. Tourists visited the Smithsonian during 1983 in record-breaking numbers—a total of nearly 26 million. That's about 14.5 percent higher than the number for 1982 and more than a million more than the previous record, set in 1978. To put it another way, it's as though the entire population of greater Mexico City plus Calcutta had flocked through the museums, though fortunately not all at once.

I'm always uneasy about celebrating records of this sort because I turn instinctively toward smallness instead of bigness. If anyone else has this perverse trait, the following guide might prove helpful.

If you really seek peace and privacy, steer clear of the National Air and Space Museum (NASM). It's the most popular museum in the world. Last year, the little clickers that the guards use to tally attendance went off 10.6 million times (more people than in greater New York City). The clickers sounded like Geiger counters in a uranium lode. If you want to see air- and spacecraft, go—but also line up a trip to the Paul E. Garber Facility in Suitland, Maryland, where you can visit the displays in storage.

Of course I must admit that everyone should see the new gallery showing the "Golden Age of Flight" at NASM. It's fine and meaningful and opens this month, and maybe you who don't like crowds can find a moment—the instant the doors open, perhaps, on the day of a

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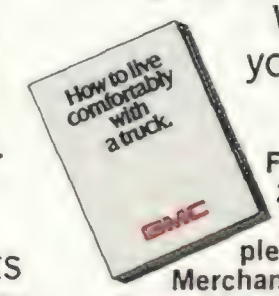


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blizzard—when you can have it more or less to yourselves.

But be careful of the Museum of Natural History, which lured nearly six million people (the population of Bombay) in 1983, and the Museum of American History, which was only a little behind (metropolitan Philadelphia, maybe). The "*M*A*S*H*" exhibit at the latter proved itself one of the most popular since the building opened—some 285,000 tourists (Birmingham, Alabama) from August to the end of the year.

Our biggest tourist month last year was July; the count was 3.3 million (more than Chicago). Eremites (a fancy word for loners) should never visit the Smithsonian on July 4 or on the Friday after Thanksgiving (more than 182,000 people last year—about the same as Knoxville, Tennessee). Instead, come in January. The lonely guards will greet you cordially and you can wander at will without the jostle of crowds.

Go to the Freer Gallery of Art: beautiful Oriental and Islamic objects. If you want a physical demonstration of serenity, that's it. Go to the National Museum of American Art and the National Portrait Gallery, both in the handsome old Patent Office Building. They're not jammed, because they're away from the Mall, and if you like history, they've got it—the faces of our nation, the sweeping views of what we did and where we went in our vigorous youth. Go to the Renwick Gallery, to savor at your ease the elegance of a Victorian building. I'd also push the Museum of African Art, except that until it moves into its new building down on the Mall, it's crowded no matter what the numbers are. But on the other hand, there's something to be said for being surrounded by people who are having as much fun as you are.

Visitation to the National Zoo defies counting. It has too many entrances to keep track of, but the guess is that it welcomed up to three million (Los Angeles) zoo-goers last year. If you brave the place in midwinter it's all yours, and the animals will appreciate your company.

However we like it, everything seems to leap forward. Last year the Smithsonian Associates Women's Committee, a group of volunteers which does some spectacular fund raising, put on the first annual Washington Craft Show. The idea was to present crafts—from all over the country—

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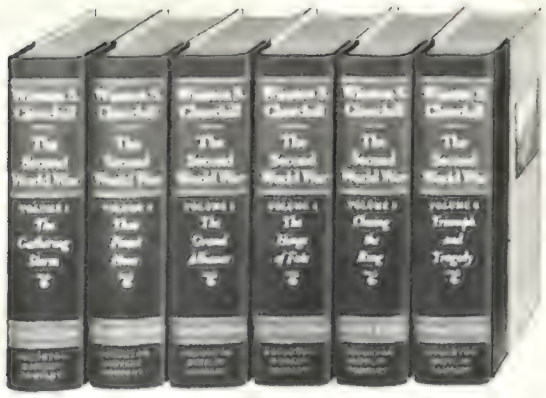

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as fine art in a juried exhibition and sale. It went over very well, and, living up to that ever-hopeful word "annual," it's due to be held again, April 27-29.

If the first show was a success, the second bids fair to be a triumph and put the happening firmly into the category of prestige events. Last year the jury chose the specified 100 exhibitors from 1,500 applicants. This year the number of applications has dropped to about 1,000. Why? Because the quality of the show has been established and, in the words of an organizer, "applicants are screening themselves." A jury of five has selected the 101 exhibitors; they are from 25 states and the District of Columbia.

The chosen few will be showing their stuff at the nice old Departmental Auditorium on Constitution Avenue, right near the Mall. It's a great place for huge and important meetings, like the signing of the North Atlantic Treaty in 1949, and with its seats yanked out it makes a fine exhibition hall.

What it will show are the creations of artists in roughly ten categories. Ceramics is the largest, with 24 displays. Textiles and jewelry have 16 each. Then come glass (11), wood (ten), metal and basketry (seven apiece), paper (five), mixed media (three) and leather (two). The show will provide a three-day glimpse of some of the best American crafts.

The Renwick Gallery—that fabulous building—is in the process of building its own permanent collection of American crafts. So far, it has primarily been showing traveling exhibitions. Curator Mich-

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ael Monroe is a member of this year's Craft Show jury. He agrees with the rest of the panel that the quality of art that the public will see at the Departmental Auditorium will be very high.

Somehow, from all that excellence, a jury will have to select prizewinners. Last year, the first prize went to Debra Chase for work in mixed media. She was given $1,000, which was welcome because she had sunk about everything she had into the trip to Washington and was down to six dollars when the award was made. Two second prizes of $500 each were given, plus three honorable mentions of $250, and a $250 special award voted by the exhibitors.

The fact is that young craftsmen are coming out of colleges with solid training because a number of schools allow majors in certain crafts. But crafts that are *art* may be a step beyond. This remarkable show, only a year old this month, will make the distinction clear.

Along with this year's Craft Show, the Smithsonian is holding a forum on 20th-century American glass (Domestic Study Tours, p. 194). There'll be visits to studios and private collections in the Washington area, and an all-day seminar on April 28, open to the public.

There's been another recurring affair going on recently in the field of maritime history. Back in November 1973 we ran an article about the grand old ocean liner *Leviathan* by a maritime writer and artist named Frank O. Braynard. I had talked to him on the telephone because I thought the subject was nicely offbeat. Then he let drop the fact that he had published the first of a planned six volumes, all about the *Leviathan*.

I was knocked out by the idea. How in the world could a busy man (he was all tied up in the establishment of the South Street Seaport Museum in New York) take on such a monumental writing task?

After that, at intervals, I would get a note from Frank Braynard saying volume such and such was finished. All this while he was program director of the South Street Museum, organizing Op Sail—the great voyage of Tall Ships in our Bicentennial year—and running New York City's Harbor Festival under the aegis of the Port Authority of New York and New Jersey. And recently I got another note, this time attached to a beautiful book.

"At long last," the note read, "*Leviathan* is done." The book was, indeed, Volume 6.

The great vessel, named *Vaterland* when she was launched in Hamburg in 1913, was a reigning queen of the seas into the 1930s. The United States had seized her and renamed her during World War I. She later became part of the rich, sometimes brassy, always exciting and restless American culture of the Roaring Twenties. Movie stars sailed on her and dutifully hiked up their skirts for the New York photographers. Millionaires played shuffleboard on her sun deck and dealt in big money through the cigar smoke of the card room. *Leviathan* was a special word that simply meant something uniquely American for that time.

And Frank Braynard is a special man. We're lucky that he's among us and not back in the Renaissance.

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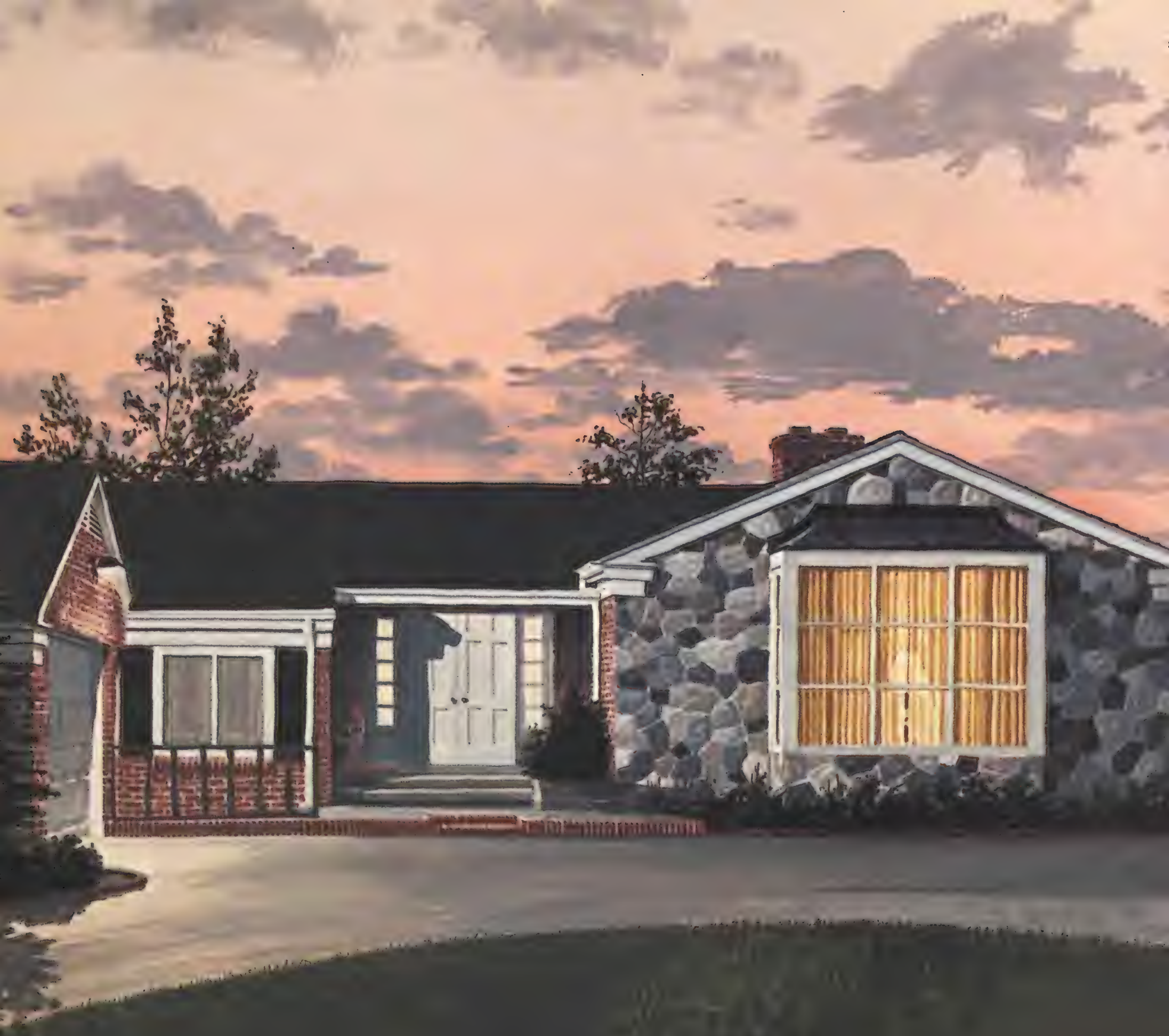

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# *Phenomena, comment and notes*

*A new look at how the world's doing raises grave questions about resources, but includes surprisingly good news*

When I was first learning to cover village boards and barn fires for a small newspaper in New York's Hudson Valley, I met a man who had a genius for finding the real news in the dull reports and bland statistics that flowed in every day from state offices in Albany. He would spend an afternoon sifting through papers like a sparrow in dry leaves, then start to type a story no one else in the state had. In the tea leaves of bureaucratic documents, he saw the future.

Institutions do the same kind of thing for us. The International Monetary Fund produces the *World Economic Outlook*. The Food and Agriculture Organization of the United Nations has been publishing *State of Food and Agriculture* for many years. Now a private group here in Washington, Worldwatch Institute, has issued the first in what it hopes will be an annual series ambitiously titled *State of the World 1984*. It tries, in the words of director Lester R. Brown, to assess "the extent to which our economic and social systems are successfully adjusting to changes in the underlying natural resource base." The aim is not so much to say that things are good or bad, as whether they are getting better or worse.

Some of the news is good and may turn out to be historic. The world is reducing its dependence on oil, and has been since 1979. Total consumption has fallen 3.3 billion barrels (one barrel is 42 gallons, which is how it was originally carried on ships). Consumption per capita has dropped from a high of 5.48 barrels a year to 4.4 in 1983. Most surprising is a corresponding fall in the oil intensity of economic activity: since 1979 it has taken fewer barrels of oil, both worldwide and in the United States, to produce $1,000 worth of gross national product. Brown writes: "There is a distinct possibility that the 22.9 billion barrels of oil produced in 1979 will never again be

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matched. If so, historians looking back from the twenty-first century will almost certainly see that year as a hinge point in economic history. . . ."

In the United States the change is dramatic. Who would have thought that per capita consumption of gasoline could fall from 515 to 437 in just five years? Or that total consumption of heating oil could have dropped 42 percent since 1973? Maybe everyone except me knew these numbers, but I was staggered. These are major changes in a very short time. High prices are what did it, of course, but attitudes are changing as well.

In other areas there is good news, too, but the news is nowhere good enough. The world's forests are disappearing in favor of lumber, fuel wood and more agricultural land. In tropical areas alone, we are deforesting 28 million acres a year, an area the size of Austria and Albania combined. The good news is that we are reforesting as well; China and South Korea are engaged in monumental efforts, and smaller efforts go on everywhere. In Malaysia more than 37,000 acres are planted to nitrogen-fixing acacia trees, while in the Sudan, farmers are planting a different variety of acacia directly with their crops. Fuel-wood plantations of calliandra, another nitrogen fixer, now cover almost 500,000 acres in Java. Community forestry is taking hold in India, although the choice of eucalyptus trees has been attacked for offering little local benefit.

Industrial plantations (which raise trees for sawlogs, veneer logs and pulpwood) are growing at 1.4 million acres a year around the world. Nonindustrial plantations (wood for fuel or charcoal, fruits and such products as gum arabic, or simply trees for watershed protection) are doing almost as well at 1.3 million acres. And yet, according to the best estimates of the Food and Agricultural Organization, the planting rate of trees for fuel wood will have to be multiplied 18 times to meet anticipated needs in the year 2000.

To me, recycling is one of the duller virtues, an opinion that may be colored by the tractor-trailer load of carefully tied newspapers rotting in my barn, waiting for the Boy Scouts who never came. The very word makes me think of standing in the rain, throwing the green, brown and white bottles into the right barrels. Yet recycling is now big business.


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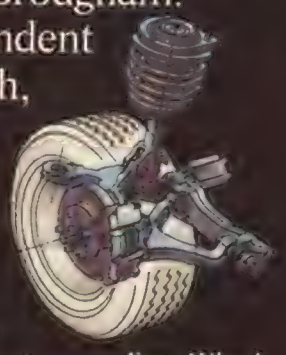

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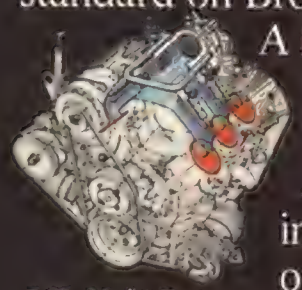

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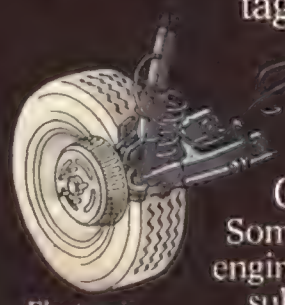

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According to *State of the World 1984*, about one-quarter of all the paper used in the world—and in the United States—is recycled. Raising this to one-half would free up to 20 million acres of forest. The production of paper would be cheaper (mills designed to use wastepaper as feedstock are cheaper to build than those designed for wood pulp) and the solid-waste problem would be reduced. (I still remember the lament of one New York City sanitation commissioner: "Everybody wants me to pick it up, but nobody wants me to put it down.")

Some figures in the chapter on recycling gave me a rush of nostalgia for Earth Day 14 years ago. To throw away a weekday edition of the *Washington Post* or *Los Angeles Times*, for example, is the equivalent of pouring six ounces of gasoline onto the ground. But until I read the book, I had not known that there was an international trade in wastepaper, much less that it is now a $600 million-a-year business.

In fact, lots of the numbers on recycling came as a pleasant surprise. Some countries recover 40 to 50 percent of their wastepaper and some of these import still more, so that waste provides half or better of the fiber needed to make new paper. The numbers are almost as good for aluminum and iron and steel scrap. Using scrap saves 95 percent of the energy needed to make new aluminum from scratch. You not only avoid the strip-mining for the original bauxite ore, you avoid strip-mining the coal or damming the river to produce the electricity to make the aluminum. This country was recycling only 15 percent of its aluminum cans in 1972; that number is now 54 percent. One "reverse vending machine" (it takes your empty can and gives you money) in North Dakota reclaimed 109 tons of aluminum in one year; 20 of them in Denver paid out more than $1 million during an 18-month period.

Despite these selected tidbits, the book is not cheery. In Brown's view, the world as a whole faces economic crisis: incomes are falling in at least 18 countries, governments are running record deficits, the foreign debts of some Third World countries are verging on the unmanageable, populations of developing nations continue to expand. The growth in Africa's food supply compares favorably with that for the world as a whole, Brown notes as just one

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example, and yet—because of population growth—Africa's food production per person has fallen 11 percent since 1970.

The roots of the economic crisis, he argues, lie in the depletion of resources. We have achieved unprecedented production but not sustainability, which he defines as the recognition "that economic growth and human well-being depend on the natural resource base that supports all living systems." Later he puts it another way: "A sustainable society is one that shapes its economic and social systems so that natural resources and life-support systems are maintained. Today we study the archaeological sites of earlier civilizations that failed to do so, depleting their soils, mismanaging their irrigation systems, or otherwise embarking on an unsustainable development path."

Before I went into newspapering, I had a short, unsuccessful career as an oil-company salesman. The saddest part of it was always the time when a dealer went out of business, and the scariest was the dealer who did not believe he was in trouble until the day a tanker pulled in with 8,000 gallons of gasoline and he realized he did not have the money to cover it. Worldwatch is going to try to keep the books for all of us. *State of the World 1984* is interesting, but it is the next report, and the next, that will tell us how the business is really going.

*John P. Wiley jr.*

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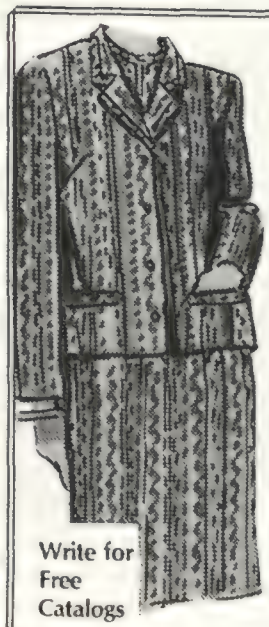

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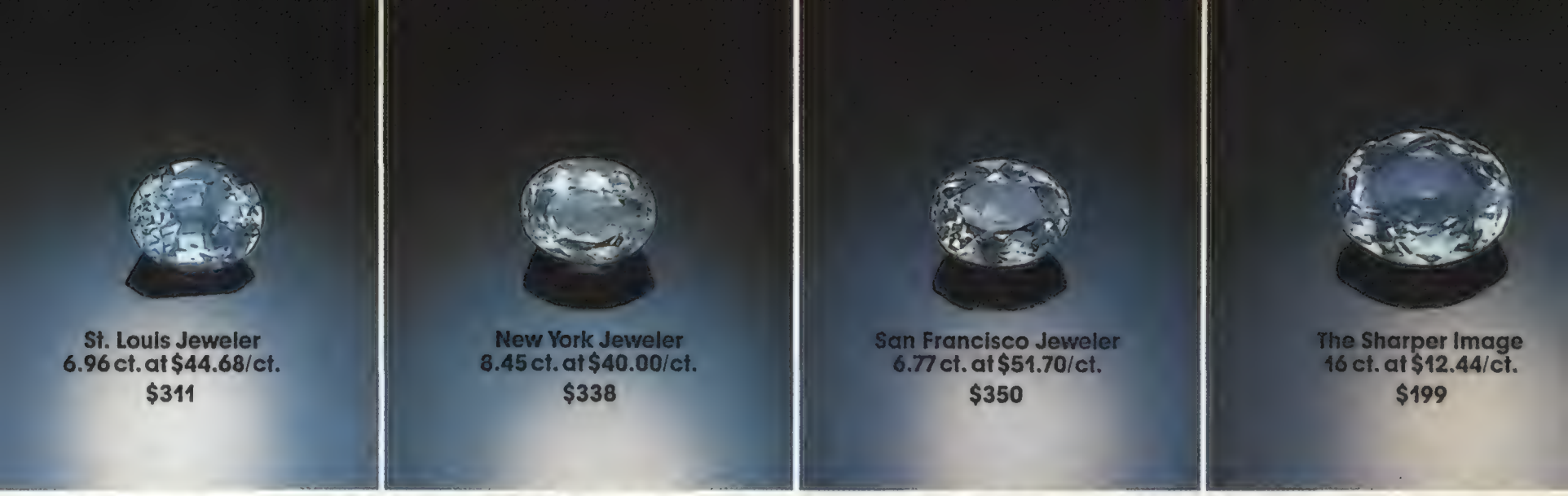


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When a gemstone leaves the mine, it begins a long journey. Before it goes on display in your jeweler's showcase, it may pass through several countries and a half dozen hands. Dealers, distributors, wholesalers, importers—each taking a profit on that stone.

How much can this add to the price you pay? Far more than you imagine. Take the case of blue topaz—a brilliant, sparkling gem that's become especially popular since aquamarine soared to over $350 a carat.

Recently, The Sharper Image purchased blue topaz at three typical jewelry stores in New York, St. Louis, and suburban San Francisco.

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The Sharper Image operates more efficiently. Our tough buyers go to Brazil and purchase 5,000 carats at a time—directly from the mines. This gives us tremendous leverage on price. And means we can be very selective in the quality of stones we'll accept.

When you buy blue topaz direct from The Sharper Image, you by-pass all the middlemen. And because we sell more blue topaz in a day than most jewelers sell in years, we can afford to make less on each sale.

And the benefits of direct buying don't have to end with the purchase of blue topaz. Everyone who orders will receive our latest Gemstone and Jewelry catalog. Full of dramatic, exclusive jewelry designs and remarkably affordable gemstones.

### Customers tell the story best.

Mr. W.D. of Atlanta wrote to us recently after attending a local gem show:

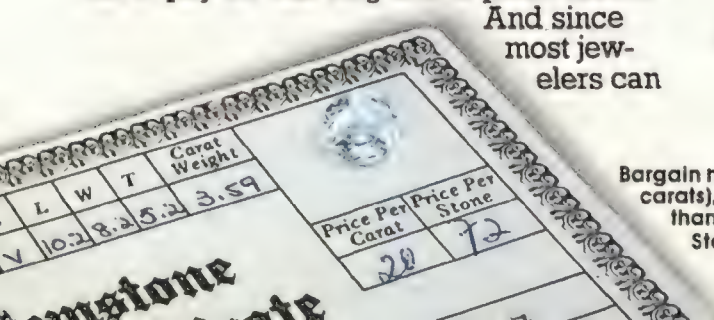
***"I compared a similar 10 carat blue topaz... for $1,000. Each of the three new stones that you sent are larger and just as beautiful at a much more attractive price."***

Another letter came from Dr. C.A. of Wayne, Pennsylvania:

***"I would like to express my delight with the unmounted blue topaz I ordered. It was advertised at 24 carats...it arrived in barely one week and weighed 25.60 carats! The color and cut are superb and put my aquamarine to shame. Needless to say, it was appraised at well over what I paid for it."***

Mrs. J.F. of Muncie, Indiana sent us this information:

***"I am happy, too, with my jeweler's appraisal of the [blue topaz] stones: 10.43 carats—$425 [her cost, $139], 16.37 carats—$700 [her cost, $199]."***

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*By J. Tevere MacFadyen*

# Routine shipments of essential goods are freighted with special risks

*With so many hazardous materials traveling by truck and train these days, thousands of unsuspecting people are living in harm's way*

Gasoline is involved in more bad accidents on the nation's highways than any other cargo. Luckily, no one was killed when this tank truck carrying unleaded fuel overturned and caught fire in Memphis, Tennessee.

On the morning of September 28, 1982, Marzie Stewart woke from a dream at about four o'clock. Mrs. Stewart was accustomed to waking at odd hours. She and her husband, Hannon, operated a private ambulance service from their home in Livingston, Louisiana, 25 miles east of Baton Rouge, and there was no telling when the phone might ring with an emergency call. When she didn't drift off again right away, Marzie climbed out of bed, taking care not to disturb Hannon, and went into the kitchen.

At 4:10, as Mrs. Stewart was first waking, Illinois Central Gulf Railroad freight train Extra 9629 East pulled out of Baton Rouge Junction, bound for McComb, Mississippi. It was hauling 100 cars. Most of them, like most of the cars in many of the trains in the oil-rich Gulf Coast corridor, contained chemical or petrochemical products. At 5:12, approximately a half-hour ahead of schedule, Extra 9629 East arrived at milepost 26, on the outskirts of Livingston. Moments later, near the center of town, as it passed over a grade crossing a few hundred yards west of the Stewarts' neat brick house, the 16th car in the train jumped the track. The next 42 cars followed suit. They stacked up against one another in an accordion fold, crosswise to the rails. The concussion tossed Hannon Stewart out of bed. "Everything was moving inside the house," Hannon remembers. "It was like an earthquake in there."

According to witnesses, an interval of several minutes ensued immediately after the train derailed, during which flammable gases escaping from breached tank cars gathered in the cool morning air. Then, somehow, they ignited. The explosion was audible 15 miles away. It produced a fireball 400 feet in diameter, shattered windows within a two-mile radius, defoli-

When train carrying chemicals derailed in Livingston, Louisiana, in 1982, entire town had to be evacuated.

ated the surrounding woods and flattened an adjacent barn. At 5:13, the train's engineer used the radio in his locomotive to notify the railroad's dispatcher of the derailment. "We are on fire!" he reported. "We're on fire! We've turned 'em over and the whole world's on fire back there!"

Fortunately for Livingston's residents, local and state authorities reacted to the derailment with extraordinary speed and efficiency: within a half-hour, Mayor Allen Hunt, assisted by his police and fire chiefs, had already begun evacuation procedures. By 6:30, the crack Louisiana State Police hazardous-materials team was on the scene, sizing up damage, contacting shippers, setting up a sophisticated command post. Within hours, the entire area was sealed off and a coordinated response was under way, led by an affable state trooper and explosives expert, Capt. William T. (Billy) Poe. It would be two weeks, though, before the situation was brought fully under control.

The exceptional thing about Extra 9629 East was the fact that it derailed. Its cargo was utterly commonplace. Trains carrying essentially the same mix of products passed through Livingston daily before the derailment occurred, and they are doing so again now that the track has finally been reopened. Nor is the movement of such dangerous substances by any means confined to the Gulf Coast, though the volume of traffic may be somewhat higher there. At any given time in the United States, anywhere from five to 15 percent of all trucks on the road are carrying toxic, corrosive, flammable, explosive or otherwise hazardous materials. Roughly 80 million tons of the stuff move by rail each year. Dangerous cargoes travel by every transportation mode, in all kinds of weather, day in and day out, through uninhabited countryside and densely populated cities alike.

### *It's a problem most people don't think about*

We are not talking here, for the most part, about anything that's out of the ordinary—the disposal of spent nuclear fuel, for example, or the illicit dumping of toxic wastes. We are talking about conventional materials used in normal commerce, from fuels and fertilizers to plastics and paints—products vital to both our life-style and our economy. With so much moving around, accidents are bound to happen. And given the volatile nature of many of the substances involved, it is hardly surprising that some of these accidents are pretty spectacular. What *is* surprising is how little attention the subject customarily receives. The routine transportation of hazardous materials is something most people think almost nothing about except in the aftermath of a major incident.

There were no deaths or injuries at Livingston, but

Earlier this year, Marzie and Hannon Stewart visited reopened tracks where Livingston accident (opposite) occurred. The Stewarts, who lived nearby, lost their home and business because of spectacular derailment.

in 1978 16 people were killed in Waverly, Tennessee, when a derailed tank car carrying liquefied propane gas exploded and burned. The same year, the derailment of a chlorine tanker in Florida left eight dead and 138 injured. In April 1982, seven people died after a city bus collided with a gasoline truck inside a tunnel near Oakland, California. Between 1971 and 1979, hazardous-materials transportation accidents claimed 229 deaths and caused more than 6,000 injuries. Their frequency, moreover, appears to be increasing, up from 2,225 so-called "unintentional releases" in 1971 to 16,115 in 1980. During that nine-year period, the cost of accident-related property damage alone topped $100 million. At Livingston, 3,000 people living as far as five miles from the site were evacuated for up to two weeks. Some, including the Stewarts, lost homes or businesses, or both. The rail line was closed for more than a year. Train equipment and cargo destroyed in the accident were worth $2.5 million, and clean-up costs have already climbed to more than $10 million. Pending lawsuits could double that total.

Whatever the costs, it is clear that dangerous cargoes will continue to be transported over the nation's railroads and highways. They have to be. Compared to certain other risks, moreover, they seem to be relatively safe. Many more people are killed and injured each year in auto accidents, and natural disasters inflict far greater property damage. Still, the daily exposure of millions to potential mishaps puts the transportation of hazardous materials in a special category and raises some fundamental questions. Is movement of risky cargo being handled as safely as it can and should be? What systems are presently in place to prevent accidents? What, if anything, is being done to critique and strengthen those safeguards? And what happens when something does go wrong? How are people and property protected, and by whom? How well prepared are our cities and towns for even a moderately severe accident? "The stuff has to go somewhere," concedes Gino Carlucci, director of analysis and planning for the city of New Orleans, which recently completed a study of hazardous-materials transportation in the city and an accompanying emergency-response plan. "The question is how to move it as safely as possible."

The federal government has been asking that question for a long time but it has come up with few satisfactory answers. That is understandable, given the erratic history of modern transportation in this country. Air, water, railroad and highway systems developed at different times under different conditions, with different regulatory constraints. It was not until 1967 that the responsibility for all of them was consolidated in the U.S. Department of Transportation. That agency's Materials Transportation Bureau, which issues all regulations governing the conveyance of hazardous materials, was not formed until 1975. Its rules specify

*J. Tevere MacFadyen, who lives in Brooklyn, wrote on New York's Chinatown last year. Holt, Rinehart and Winston will publish his book about small farms.*

how such materials must be packaged and shipped, itemizing nuts, bolts, methods of construction, types of materials and so on. The primary responsibility for *enforcing* those standards, however, rests not with the Materials Transportation Bureau, but with the Federal Highway Administration, the Federal Railroad Administration, the Federal Aviation Administration and the Coast Guard.

Not only do individual transport modes fall under the aegis of separate agencies, but certain cargoes, as well, have their own overseers. The Environmental Protection Agency, for example, holds sway over pesticides and agricultural chemicals. Compounding the problem is the fact that transportation crosses city, county, state and national jurisdictions. The Hazardous Materials Transportation Act, passed in 1974, attempts to consolidate these widely dispersed responsibilities, but its enabling legislation is nightmarishly complicated and a dozen or more states still have not incorporated the act into their own codes.

Trucks epitomize these regulatory difficulties. "That's where most of the statistics occur," says Lee Santman, director of the Materials Transportation Bureau. "A rail accident is a spectacular thing, but it doesn't happen that often." Rail cars hold far more than even the biggest trucks, but there are comparatively few of them, and thus they are easier to control. Millions of trucks ply America's roads. Some are part of large corporate fleets, but many more are independents. Making sure they are all safe and safely operated is a job nobody seems to want.

Remarkably, the operators of vehicles hauling most hazardous materials are not required to have any special licensing or registration. "Hazardous-materials drivers ought to be specially registered and licensed," says Tom Lasseigne of the National Transportation Safety Board. "The way it is now, it's not easy to eliminate the bad ones."

Sixteen people died and more than 300 were injured when propane tank car derailed in Waverly, Tennessee.

*State inspection programs: Filled with holes?*

When it comes to inspecting vehicles, too, most state programs are notoriously porous. A portion of the recent nickle-a-gallon federal gas tax has been earmarked to help states improve their inspection and enforcement capabilities. A few states, such as Illinois and Louisiana, already have excellent programs but they are the exceptions.

Some local officials call for an expanded federal inspection role. Santman demurs. "There isn't any way the federal government can conceivably perform the number of inspections that the public is looking for," he says. "I just don't think you're ever going to see a single federal agency geared toward doing that."

Both trucks and trains are vulnerable to one prob-

Gasoline blaze in Garden Grove, California, erupted after the carrier swerved to avoid a car and jackknifed.

Explosion unrolled tanker's steel body and hurled it against a building and car some 90 feet from tracks.

Propane tanker burned for three days when a washout caused wreck in Florida. Workers finally blew it up.

lem that neither inspection nor licensing can control: disruption by vandals or, worse, terrorists. With so many miles of highway and track, and so many trucks and trains traversing them, adequate security is almost impossible to achieve. Rail lines in remote regions cannot be effectively policed and trucks carrying dangerous but conventional cargoes are hard to safeguard while in transit.

A 1983 National Academy of Sciences report takes Washington to task for its handling of hazardous-materials transportation. It outlines a number of pressing problems, including the need to clarify and improve the Department of Transportation's regulations, to improve training of hazardous-materials personnel, and to clarify the roles of public officials at different levels. "There is no agreed-on hazardous-materials transportation safety goal within the government-industry complex," the report notes. "In large measure this is due to a lack of defined purpose underlying the federal regulatory program."

The earliest steps toward the regulation of hazardous materials in transport were taken by the railroad industry itself in the late 19th century. The railroaders sought to standardize packaging and shipping practices for explosives, chiefly black powder, which had a nasty habit of blowing up boxcars. These standards were eventually codified by an Act of Congress, and industry has taken the lead ever since, albeit with some federal oversight. Critics charge that the Department of Transportation's hazardous-materials regulations are preoccupied with the minutiae of manufacturing and ignore such critical questions as whether certain materials should be shipped at all. They are also unhappy with the way the rules are written. "Our system of regulation is a standard-setting system," says Ray Scanlon, a hazardous-materials expert who works for the Port Authority of New York and New Jersey. "But the standards used are not really DOT standards, they're industry's."

*Safety for gasoline trucks—at a price*

While some people fault industry for foot-dragging on safety, there is a general consensus that trucks and railroad tank cars are becoming safer. Still, there are limits to what can be done. Gasoline, for example, as measured by the incidence of accidents in which it is involved, and their effects, is far and away the most dangerous cargo on the nation's highways. It would be possible to build gasoline trucks that are as well protected as those that haul nuclear fuel, but doing so, the carriers say, would mean paying much more for gas at the pump.

When it comes to preventing accidents, most experts agree that better supervision of personnel and tougher

In realistic exercise, firefighters try to plug simulated leak in a pipe at National Fire Academy in Maryland.

enforcement of equipment standards are potentially more important than technological advances. The Livingston fiasco provides ample support for that. Track which supposedly had been inspected the day before the wreck was later determined to have been defective, possibly triggering the derailment. Worse, according to the National Transportation Safety Board, the train's engineer and conductor had been drinking and at the time of the incident had turned over the controls to an unauthorized passenger.

Although the transportation of hazardous materials is clearly a national issue, the burden of preparing for an emergency and responding when one occurs falls squarely on states and localities. Firefighters, as a rule, have the most immediate local responsibilities when an incident does happen. With other local authorities, they must make the crucial initial judgments: whether or not to evacuate, how best to stabilize the situation, or whether it makes sense to get involved at all. Sometimes the wisest course is to back off and call for help.

Two national hot lines exist specifically to respond to such calls. One, CHEMTREC, is a 24-hour, toll-free service provided by the Chemical Manufacturers Association in Washington. Staffed mostly by retired military men, CHEMTREC provides immediate data on some 60,000 brand name and generic chemicals. It also can link personnel at the scene of an accident with chemical-industry experts.

The second emergency hot line, the National Response Center (NRC) in Washington, is funded jointly by the Coast Guard and the Environmental Protection Agency. The NRC's nationwide network of hazardous-materials experts will go to the scene of most accidents. In the case of a major crisis, these coordinators can arrange to have a specially equipped "strike team" flown in within hours.

### *Crumpled trucks, noxious fumes, blazing cars*

Invaluable though these services may be, they are no substitute for local emergency personnel who are qualified specifically to deal with hazardous-materials mishaps. To receive specialized instruction, thousands of firefighters from all over the country have attended the National Fire Academy, a federal training center located in western Maryland, near Camp David. Two dozen of them assembled recently in an institutional-green classroom for Jim Covington's class on "Hazardous Materials, Tactical Considerations." Covington retired after 25 years with the Memphis fire department to join the academy staff. He is a lean, soft-spoken man whose personal experience with hazardous materials is dreadfully extensive. One wall of his office features a rogue's gallery of photographs from his professional scrapbook: crumpled tank trucks awash in noxious

chemicals, blazing railroad cars belching inky smoke.

Today, midway through the two-week course, Covington leads his students in desk exercises designed to demonstrate the myriad complications that can crop up during a hazardous-materials emergency. The circumstances of each case are drawn not from his imagination, but from memory. He uses a slide projector to illustrate key points, then asks the class to formulate response plans.

Just now, the screen is filled by a gasoline truck lying on its side across an intersection. Nearby are two office buildings, a fuel storage facility and a gas line. The truck does not appear to be leaking, and there is no fire. "What are you going to do?" Covington asks. "Take a few minutes to think about it."

They work in teams of five or six to diagnose the situation and take stock of their options. They do not look much like students, these muscular men in navy blue jump suits, many of them well into middle age. The class roster represents 16 states. Though all of the men will leave with a great deal of technical information, the opportunity this class offers for each to trade tales with his peers may be almost more important. At home, with few exceptions, they are alone in their departments as hazardous-materials specialists. Here, they benefit not only from Covington's expertise, but from the experience of everyone else in the room, too.

Clad in colored protective suits, students practice emergency work on Academy's mock-up of tanker dome.

Instructor Jim Covington, "hazmat" expert, helps "moon-suited" Academy student explore gas cylinder.

*"Never take anything for granted"*

After less than ten minutes, Covington calls the discussions to a halt. "All right," he announces. "You've now had exactly as much time as we had before this happened." He clicks the carousel forward one notch to reveal the truck engulfed in flames and burning out of control. "Murphy's Law, gentlemen," he intones. "Murphy's Law. If something can possibly go wrong, it will. *Never* take *anything* for granted." As a precaution, Covington explains, he and his men should have covered the overturned tanker with a blanket of vapor-suppressing foam.

Handling a hazardous-materials emergency has little in common with fighting a conventional fire. In fact, the fireman's most basic impulse—to go in and put out the fire—is often the wrong thing to do. Water, for instance, may be worthless—or worse. Some chemicals, like metallic sodium, become more dangerous, not less, when water is applied, forcing firemen to use synthetic foams instead. Caustic chemicals or corrosive substances can chew through protective clothing. Chemicals mixing at random in the aftermath of a spill may combine to form new toxic compounds.

Typically, a firefighter working to control a chemical release must wear a fully encapsulated rubber or vinyl "moon suit," with a heavy self-contained breath-

Livingston's Mayor Hunt: "We got so used to trains coming through, we never thought about it."

ing apparatus strapped to his back. One afternoon not long ago, a visitor donned this gear and joined Jim Covington's class for a mock drill. His assignment was to wrap a band of rubber around a split pipe that was spewing tetraethyl lead. Actually, it was only water, and that was a good thing, too. Encased in the cumbersome suit, gloved and booted and breathing through a regulator, it was all a novice could do to lumber onto the site, much less stop the leak.

The conversation of people in this line of work is salted with jargon, the visiting student soon learned. They refer to themselves as "hazmat" specialists, and to the chemicals they must cope with simply as "product." A gasoline tanker is a "juice truck." Extinguishing a burning tanker can cause pressure to build inside, possibly precipitating a boiling-liquid-expanding-vapor explosion—a "BLEVE," in the argot of the experts. When a pressure vessel explodes, it tends to "rocket," and may unroll into a flat sheet of steel known as a "dance floor." Fear, though ever present, is diminished in dialect. "Let me tell you," Covington chuckles, "when you have to crawl in on your belly underneath an LPG [liquefied propane gas] tank to shut off a leaky bottom valve, that's when the pucker factor goes up to 100 percent!" BLEVEs are unpredictable but predictably dangerous. At Livingston, on the fourth day of the evacuation, as townspeople clamored to return to their homes, a tank car exploded. Half of it ended up in a grove of trees 425 feet away.

Although firefighters, police and medical personnel all need schooling in the dynamics of chemical incidents, courses like Covington's are few and far between, and many are prohibitively expensive. So is the equipment needed to cope with hazardous-materials accidents. Just one firefighter's moon suit might cost more than a thousand dollars and be good for only one use. The likelihood of a small-town fire department making such an investment is remote.

Most communities could go a long way toward protecting themselves, Ray Scanlon says, by simply studying their own situations. Scanlon took a leave from his job with the Port Authority to develop a practical risk-assessment model that local authorities can use. "My definition of the real problem," he says, "is that we need a lot more information."

The questions a community should consider are fairly basic. What moves through town when, and who moves it? Where do the products come from and where are they going? What routes are used? What public or private resources in terms of expertise and equipment could be called upon in an emergency? Armed with this information, cities and towns can plan accordingly. "Without a plan," Jim Covington warns, "there's bound to be trouble."

Given the disorganized state of hazardous-materials transportation in the United States today, it is hard to avoid the unsettling suspicion that only good fortune has prevented a truly catastrophic incident. "Luck has a lot to do with it," Ray Scanlon allows. Because he lives and works in New Jersey, he wonders what might happen if a Livingston-type accident occurred in the thickly settled region between Newark and New York City. "I lose sleep over that," he admits. Transportation and chemical-industry representatives cite Livingston as an example of how well a hazardous-materials incident can be handled—as indeed it was—but even they reluctantly acknowledge the role that chance played there. What if the train had derailed 15 miles sooner, in a heavily populated neighborhood of Baton Rouge? What if it had come two hours later, when the Livingston high school, located a block from the derailment, would have been teeming with students? What if the local authorities had not immediately evacuated the town? Looking hard at the transportation of hazardous materials would give anyone a bad case of the what-ifs.

*Mayor Hunt waits for the first train through*

Livingston's mayor, Allen Hunt, is a large, heavyset fellow with a well-chewed cigar stub cemented into one corner of his mouth. He wears an open-collared white shirt. He has an easy-going manner, a cowlick in his graying hair and a bum leg. One afternoon last fall, he held court alongside the newest stretch of railroad track in the state of Louisiana. A train was due to come down that track, eastbound out of Baton Rouge—the first train to pass through Livingston since Extra 9629 East derailed in the middle of town. The mayor was in a reflective mood.

"I've never considered Livingston to be any show-

place," he said, "but it's a nice town and we like it. We were raised up here on safe trains—pulpwood and general commodities. We got so used to the train coming through, and the transition to chemical cargoes came so gradually, that we never really thought much about it. I guess we'll think about it now, though."

For his part, Hunt intends periodically to deploy a squad car by the railroad tracks. The car will be equipped with a police radar gun, and the officer on duty will time trains as they go by. The speed limit on that stretch of the roadbed is 35 mph and the police are authorized to flag down speeding trains and give them tickets. Hunt says he will do just that.

Such vigilance is a welcome change from the apathy that has for too long characterized official attitudes toward hazardous-material transportation all over the country. At the same time, however, the fact that Mayor Hunt's local speed trap can be considered progress is a disturbing commentary on how little has actually been done thus far to protect the public.

Is the system safe? In his air-conditioned office at the Department of Transportation in Washington, Lee Santman pondered the question. "Yes, I think you can say it's safe," he responded. "There's still more room for improvement, of course. There's always room for improvement. I think that things will get better. But can I sit here and say that we won't have another major accident, a Livingston with a lot of people present? No, I can't say that. I don't think anyone can say that for sure."

A significant number of trucks on the road at any given time are carrying dangerous cargo, but operators are not required to have any special licensing or registration, and vehicle-inspection programs are lax.

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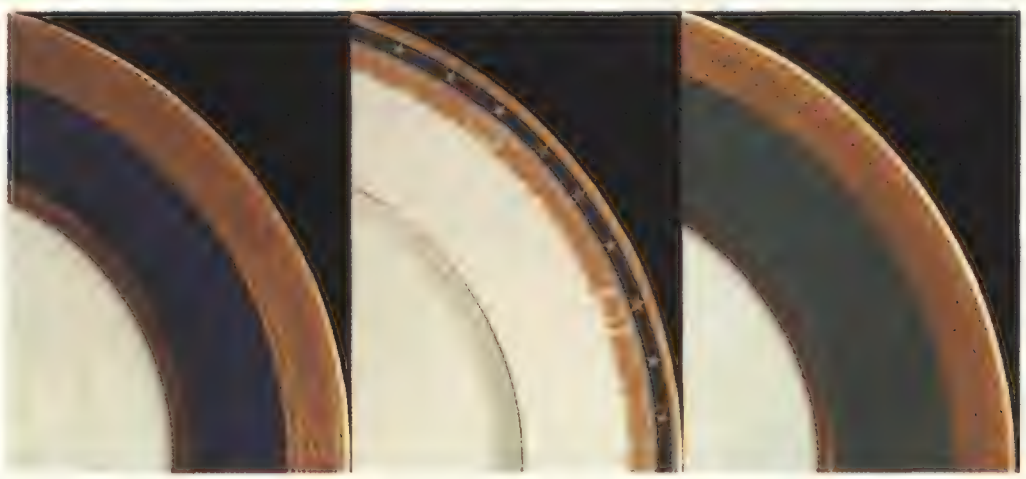

The Wilson (1918), Roosevelt (1935), and Truman (1951) China Services.

What is most remarkable about these services is not the inherent prestige in gracing the most prominent table in our land, but rather that the very same quality china is available to everyone. Of course, the actual White House patterns are unobtainable. Yet all the care and artistry that go into the Presidential Services go into every single piece of Lenox China.

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*By Israel Shenker*

# Whistler's art came first; enemies were the next in line

*Major showings of his work in Washington and Glasgow display his gentle art and bring to mind his fiery personality and wild wit*

When ailing James McNeill Whistler dictated a will, industrialist Charles Lang Freer acted as stenographer. And when the artist died in 1903, Freer was there—in a portrait of somber introspection. Whistler had not quite finished the portrait, and Freer bought it from the estate for $2,400. He subsequently threw in a million dollars, along with additional Whistlers—84 oils, 52 pastels, 48 watercolors, scores of drawings and etchings—to establish the Freer Gallery of Art in Washington, D.C.

In this 150th anniversary year of the artist's birth, the Smithsonian's Freer Gallery (SMITHSONIAN, January 1977) is celebrating with a Whistler exhibition, sponsored by AT&T, which opens May 11 and closes December 1. The show is wall-to-wall evidence of the artist's range and the collector's ardor, with almost 300 works on view.

A self-made man who amassed a fortune in Detroit constructing railroad rolling stock and assisting a merger with other producers, Freer retired in 1900, age 46, in favor of the pleasures of idleness energetically pursued; he built a great collection of Eastern art, and patronized a small number of American artists as well. Whistler and he were united by friendship and mutual advantage—a classic example of renewable supply encountering calculated demand.

There is another major Whistler show this year—and that one, in a roundabout way, has its origins in Whistler's will. Originally he left his silver and china and his wife's jewelry to the Louvre. But where there's a will there's a way, and his heiress and executrix, sister-in-law Rosalind Birnie Philip, found it in a 1903 codicil. There Whistler said it was merely his "desire" that *she* should leave it all to the Louvre.

Paris already had Whistler's mother, a canvas inordinately celebrated, but Miss Philip's heart belonged to Glasgow. She was the daughter of a Scottish sculptor, and *her* desire was to favor Scotland. The treasure went to the University of Glasgow, along with almost all the art and oddments that Whistler left behind: 78 paintings, more than a hundred pastels, several hundred drawings, plus watercolors, etchings, other prints, scrapbooks, palettes, brushes, spectacles, furniture, even tablecloths. That trove now forms the centerpiece of the university's new Hunterian Art Gallery. There it constitutes the world's other great Whistler collection. Glasgow has Freer's letters to Whistler; the Freer holds the other side of the correspondence. Paintings at the Freer have echoes in canvases at Glasgow. And the Freer's exhibition will be paralleled, from May 25 to late October, by the one at the Hunterian—to include just about all its Whistler oils and pastel drawings, plus selections from his other work. Books and photographs owned by Whistler will be on view at the university library next door.

If Whistler honors Glasgow with his presence, Glasgow earlier singled itself out by honoring Whistler. It was the first city to purchase a Whistler—the portrait of Thomas Carlyle. Of course Glasgow had tried to get Carlyle for less than the asking price of 1,000 guineas (about $5,100)—the figure was less than life-size. "But, you know," Whistler suggested, "few men are life-size."

Glasgow University gave Whistler an honorary doctorate—in April 1903, three months before his death. Then the university assiduously, tenderly, pursued the courtship of Miss Philip. In 1934 the principal wrote her about "the magnificent gift you are good enough to contemplate"; a fortnight later he was marveling at "your noble gift"; six months after that it was "the precious gift," and then it became "the munificent gift." Miss Philip might have suspected that the Scots had latched on to a thesaurus, but she was susceptible and she succumbed. Considering his personality, it is

Freer Gallery of Art, Smithsonian Institution

Whistler was about 23 when he began work on this self-portrait, probably inspired by a Rembrandt that he had seen in the Louvre of a man in a beret. Here he gave himself a saucy Latin Quarter felt chapeau.

Freer Gallery of Art, Smithsonian Institution

probable that, had Whistler had any extended dealings with the Glaswegians, he would have found cause to quarrel with them as well.

"My nature needs enemies," Whistler suggested, and he was forever scanning the horizon to find them. When he shot a dog he explained that the animal had "placed itself badly in relation to the landscape." He showed no mercy to the landscape, either, and invited people to town for "the fresh air." Whistler, who lived in London, wrote of England as "this land of fog and clouds." He complained of the English as snobbish, patronizing, insufferably complacent, dull and stupid, and said the Englishman used insolence to conceal emptiness. As for the Englishwoman, "she succeeds, as no other can, in obliging men to forget her sex."

Whistler resented England's failure to appreciate that with his appearance the world had changed beyond recognition. Or perhaps England held it against him that in his art the world had done just that. His paintings memorialized fleeting impressions, subjects resolutely clouded, nature clothed in mystery, and every feature of his own composition—dress, speech, provocative wit, talent for outraging even dulled sensibilities —seemed a further challenge.

"A miniature Mephistopheles, mocking the majority!" Oscar Wilde suggested, and Henry Irving found Whistler's high-pitched "ha-ha" so devilish that he copied it when playing Mephistopheles in *Faust*. Short and slight, with curly black hair, a white forelock, flourishing mustache and monocle, Whistler acted the role of the sophisticated eccentric, humorous and convivial, contemptuous of cant, brimming with restless vitality and gifted with charm that he knew how to lavish or withhold. The world looked with wonder at this dandy in fawn-colored frock coat, a large flat hat tilted over his forehead, a bamboo cane swinging rhythmically as he sauntered forth in dancing shoes occasionally elaborated with yellow bows.

"Master of Badinage and Apostle of Persiflage," Whistler styled himself. "His lightning rapidity of wit was almost incredible," marveled the artist Henry Savage Landor. "He had a lash of the whip ready whenever anybody said anything." When an art student insisted "I am sure I just paint what I see," Whistler rejoined "Ah, but the shock will come when you see what you paint." "Do you think genius is hereditary?" Whistler was asked. "I can't tell you, Madam," he replied. "Heaven has granted me no offspring." When Dante Gabriel Rossetti framed one of his own pictures and wrote a sonnet about the paint-

*The Princess from the Land of Porcelain* was inspired by Whistler's admiration for Japanese esthetics.

Freer Gallery of Art, Smithsonian Institution

*Nocturne: Trafalgar Square, Chelsea—Snow* was painted about 1875-77 and shows Whistler's ability to capture time and atmosphere. Not the famous Trafalgar Square, it is today called Chelsea Square.

ing, Whistler suggested he "take out the picture and frame the sonnet." Rossetti abandoned the sonnet for the limerick:

> There's a combative Artist named Whistler
> Who is, like his own hog-hairs, a bristler:
> A tube of white lead
> And a punch on the head
> Offer varied attractions to Whistler.

It was what one might expect from a brash American, and Whistler was born for the part, in Lowell, Massachusetts. His mother, whose family came from the Hebrides, was the devout and dutiful second wife of a West Point graduate. Whistler's father became a railway engineer, and the Czar commissioned him to build the St. Petersburg and Moscow railroad. In Russia, and then back in America, young Whistler developed a fancy for drawing, but it did not spare him the rigors of a military education: he spent three years at odds with the brass-bound reality of West Point. The superintendent, Robert E. Lee, who in four years as a student there had never earned a single demerit, was unforgiving. Whistler afterward said that he was dismissed not for demerits but for one wrong answer in chemistry, when he said silicon was a gas. "If silicon had been a gas," he suggested, "I would have been a major general."

Whistler tried to persuade Jefferson Davis, then Secretary of War, into reinstating him at West Point, without success. Afterward, Whistler won employment with the U.S. Coast Survey. During brief visits to the office he neglected representations of the littoral in favor of ornamenting maps with heads of monks, knights and beggars. Finally he left for Paris to study art and the pleasures of Bohemian life, cultivating fellow artists as well as old masters and young mistresses. Neglectful of economy, Whistler kept sinking into cheerful poverty, pawning, borrowing, paying for food with drawings. Moving to London, he discovered the gloomy beauty of the Thames and the drafty reality of another Bohemia.

Whistler eventually settled down for ten years with Jo Hiffernan, even had a son by another woman whom he passed off as an "infidelity" to Jo. She moved out

Freer Gallery of Art, Smithsonian Institution

*Variations in Flesh Color and Green: The Balcony*, a Japanese-inspired work from 1868, was the first oil of Whistler's to be bought by Freer. The view across the Thames is of Battersea Park, a favorite subject.

when Whistler's widowed mother came to stay. Once, when a model failed to turn up, Mother sat for her portrait, cloaked in somber black and utter respectability. "Oh Mother," the artist finally exulted, "it is mastered, it is beautiful!" In Paris the painting was awarded a third-class medal, and a critic suggested that Whistler should have mentioned that the portrait depicted his mother "after her death." Mother said it was her son's favorite work. "Yes," said Whistler at his gentlest, "one does like to make one's Mummy just as nice as possible!"

Those who ventured into his studio found themselves subjected to sittings that seemed endless, and sometimes to treatment that appeared heartless. "You can't call that a great work of art," protested one man who had sat for his portrait. "Perhaps not," rejoined Whistler, "but then you can't call yourself a great work of nature."

Whistler called painting "the poetry of sight." "Art should be independent of all clap-trap—should stand alone," he said, "and appeal to the artistic sense of eye or ear, without confounding this with emotions entirely foreign to it, as devotion, pity, love, patriotism, and the like. . . . Take the picture of my mother, exhibited at the Royal Academy as an 'Arrangement in Grey and Black.' Now that is what it is. To me it is interesting as a picture of my mother; but what can or ought the public to care about the identity of the portrait?" It was more typically a statement than it was a question.

"The imitator is a poor kind of creature. If the man who paints only the tree, or flower, or other surface he sees before him were an artist, the king of artists would be the photographer. It is for the artist to do something beyond this: in portrait painting to put on canvas something more than the face the model wears for that one day; to paint the man, in short, as well as his features; in arrangement of colors to treat a flower as his key, not as his model."

Whistler extended his revolutionary survey also to interior decoration, and pioneered in painting rooms all white, or walls in bright monochrome. He encouraged a vogue for Japanese art, and for Chinese blue-and-white porcelain. During the Boxer Rebellion, Whistler sided with the Chinese. "I hope they will save the palace," he said. "All the Englishmen in the world are not worth one blue china vase." In Gilbert and Sullivan's *Patience*, Whistler was lampooned as "Such a judge of blue-and-white and other kinds of pottery—/ From early Oriental down to modern terra-cotta-ry."

He signed his work with a butterfly evolved from

*The author writes often for* SMITHSONIAN. *A TV revival of Gilbert and Sullivan was his subject last month.*

Hunterian Art Gallery, University of Glasgow

This sketch for *The Balcony* may have been basis for changes that Whistler was to make in the painting.

Glasgow Museums and Art Galleries

Carlyle, a prickly personality, was persuaded to sit for his portrait after seeing "Whistler's mother."

Freer Gallery of Art, Smithsonian Institution

Whistler used colored chalk on brown paper for subtle effect in *Nocturne: Battersea Bridge,* drawn about 1872. Artist used a free hand to suggest railings, increased height of support to gain effect.

the initials J and W, and the creature was adorned with a scorpion's sting. "Yes, yes, he forgot himself," Whistler said of an offending critic, "but then he is quite right to forget what is not worth remembering." Critics stung by his audacities called his views balderdash and his art blotching, daubs and drabs. Whistler assimilated his painting to music, titled his works nocturnes, symphonies, harmonies. Though inclined to praise his etchings, critics turned a deaf ear to the canvases on which the paint was thinly applied, but worked and reworked, for perfection was stubbornly elusive. "I have seen, and heard, much of cockney impudence before now," John Ruskin wrote when he viewed the Whistlers at an exhibition, "but never expected to hear a coxcomb ask two hundred guineas for flinging a pot of paint in the public's face."

Whistler sued, claiming £1,000 ($4,800) damages, and expressing a disdain for critics who had not spent a lifetime *in* painting, just *around* painting, else the museum guard should be a critic.

The Attorney-General sought to ridicule Whistler's work as unfinished, unclear, an attempt to hornswoggle the public. How long had it taken to paint the picture? Two days, Whistler replied. For that, said the Attorney-General, to ask 200 guineas!—nearly $1,000. "No," Whistler rejoined to applause, "I ask it for the knowledge of a lifetime."

He won his case, and was awarded a farthing, the fourth part of a penny. Ruskin resigned as professor of art at Oxford, and Whistler resigned himself to the rigors of bankruptcy hastened by costs of the suit. When the Arts Club asked him to pay his bills, Whistler offered a painting. The secretary replied: "It is not a Nocturne in purple or a Symphony in blue and gray that we are after, but an Arrangement in gold and silver." To a man who commiserated on Whistler's bankruptcy, the bankrupt suggested: "Don't pity me—think of those poor devils, my creditors."

The architect of the house from which Whistler was evicted had earlier lived with Ellen Terry, and had since married Beatrice Philip, Rosalind's older sister. The husband did still another honorable thing and departed this life, leaving Beatrice free to regularize *her* union with Whistler—after clamorous rows with his most recent mistress, one Maud Franklin, who regularly styled herself "Mrs. Whistler."

Ensconced in domestic tranquility, Whistler looked for adventure. He even planned a visit to his homeland, explaining, "One cannot continually disappoint a continent." But the Society of British Artists elected him as president, and the labors of office frustrated the continent. Whistler threw himself vigorously into executive duties, revamped the society's galleries and even got Queen Victoria to grant the society the right

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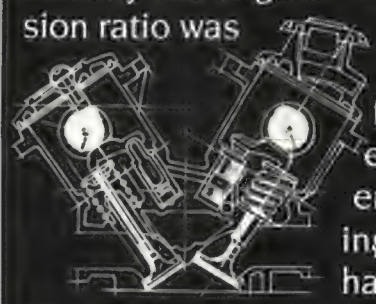

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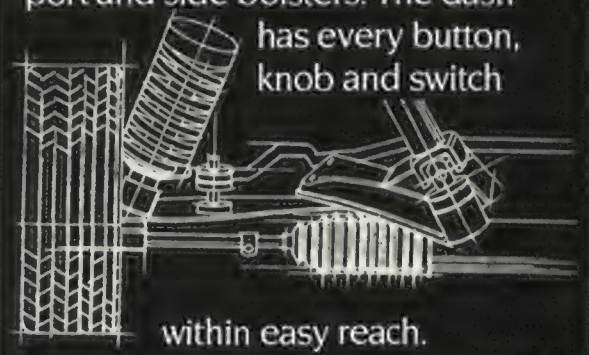

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* Car and Driver Magazine, January 1983

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# THE NEW 1984 SUPRA. CHARIOT OF FIRE.

# HOT!

Freer Gallery of Art, Smithsonian Institution

*Bead-Stringers*, a pastel from 1879-80, is one of the works completed while Whistler lived in Venice.

to call itself Royal. Eventually deposed as president of the Royal Society of British Artists, Whistler resigned altogether, along with loyal supporters, exulting that the Artists had left and the British remained.

A quarrel with Sir William Eden—father of Anthony, who was to become Prime Minister—brought Whistler back to court. Furious over Sir William's paltry compensation for a portrait of Lady Eden, Whistler not only failed to surrender the canvas but scraped off the face. The court's judgment divided the honors, and Whistler pursued his case in a polemical tract—*Eden Versus Whistler: The Baronet and the Butterfly*—and in a vendetta against anyone associating with Eden. "People imagine that just because they've paid £200 for a picture, it becomes their property," he complained.

On the death of Beatrice, in 1896, a grief-stricken Whistler found it increasingly difficult to work, burned many of his paintings and neglected to finish others (that Glasgow was delighted to acquire).

When Glasgow decided to build a handsome structure to house the Whistlers and the Hunterian's other works of art, the university's governing body approved the sale of some Whistlers, if necessary, to help finance a home for those remaining. (The will permits sale of paintings to improve the collection.) The late Andrew McLaren Young, Glasgow's fine arts professor and ranking expert on Whistler, selected canvases that could be spared. "The idea was to sell 11 Whistler paintings for about £300,000, which was what the building started off costing," Sir Alwyn Williams, principal of the university, says. There were cries of scandal and of betrayal, and finally the university raised enough money to keep the Whistlers and to complete the museum.

Arrangements in sterling to run the place are still short. A blue-and-white china vase that had been Whistler's stands prepared to receive voluntary contributions. Fortunately, when it had the cash, 22 years ago, the university paid £97 to assure "upkeep in perpetuity" of Whistler's grave in London. Miss Philip had requested that the university tend the plot and polish the bronze at least once a year. Since then, someone has made off with the four draped figures that stood at the corners of the tomb. Believing that the same would happen to replacement figures, the university has decided not to repair the damage. These are trifles in the balance, for the treasures of the Hunterian and of the Freer are not a tomb, but the artist's immortal remains.

A powerful image from 1860, *The Thames in Ice* was painted by Whistler over three days of Christmas.

Freer Gallery of Art, Smithsonian Institution

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| Graphics Display (640 x 200 resolution) | YES | OPTIONAL | YES | OPTIONAL |
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| Communication Port | YES | OPTIONAL | YES | YES |
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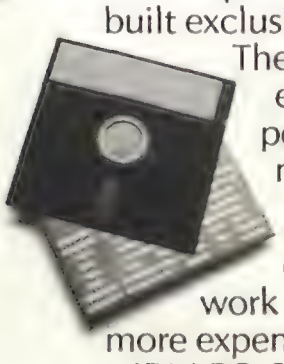

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*By Roger Tory Peterson*

# Least terns find sandy salvation on man-made beach

*When the authorities stopped grooming the sand, the smallest of the 'sea swallows' took over. Last year 4,000 pairs nested*

The author and Judy Toups check sign at tern nesting area. Stakes in the sand mark individual scrapes.

An adult least tern (it could be of either sex) sits on its scrape, a nest excavated on a Gulfport beach.

The state of Mississippi is indisputably number one in at least two things: it has the world's longest man-made beach, and because this beach is intelligently managed, it now has the world's largest colony of least terns. The least tern, the smallest of the "sea swallows," is a bird that adds sparkle and life to the summer beaches—and a bird that we nearly lost.

Mississippi could not claim either beach or terns 30 years ago when I accompanied the late James Fisher, the British ornithologist, on a 100-day birding marathon around the perimeter of the continent, a journey that started in Newfoundland and terminated in Alaska. On rereading our book, *Wild America*, that recounted our travels, I find that we made no mention of Mississippi. After searching for the near-extinct ivory-billed woodpecker along the Chipola River in Florida's panhandle, we sped to Louisiana without stopping. Indeed, the only indelible memories I have of our passage through Mississippi are of live oaks festooned with Spanish moss and lovely magnolia trees in full bloom. I remember no specific birds; certainly no least terns.

It was approximately at the time of our "Wild America" odyssey—in the early 1950s—that the Army Corps of Engineers in Mississippi began to dredge millions of tons of sand from the floor of the Gulf of Mexico to form a broad beach, 25 miles long, to protect the shore against storms. A four-lane highway separated it from the burgeoning motels and hotels that sprang up to cater to vacationers and bathers.

To maintain the area's reputation as the "Riviera of the South," all that relocated sand had to be kept immaculate. Every week or two, bulldozers and rakers would scrape up the pop bottles, beer cans and any vegetation that had managed to grow. Any tern that attempted to nest on this choice bit of terrain would see its eggs scraped up with the litter.

So for years, the least tern, "the little guy," was scarcely more than a migrant along the Mississippi coast, attempting to nest from time to time, but usually

*Photographs by Dan Guravich*

Despite the signs, destructive incidents do occur. Here eggs have been "collected," possibly by a child.

An adult returns from a successful foray with a fish for a juvenile that is now about 16 days old.

without success. The species was in trouble all up and down the Atlantic coast because beaches everywhere were disturbed. Determined to survive without human interference, some least terns tried to nest on the flat roofs of shopping centers and supermarkets, but their success rate was usually poor because roof gravel is very shallow; the bird can make no depression for its eggs without getting down to the tar, and that, more often than not, results in hard-boiled eggs.

But recently the fortunes of the least tern took a turn for the better. My friend Dan Guravich told me what had happened in Mississippi and invited me to see for myself.

When I stepped from the plane to meet Dan in Jackson, Mississippi, one day last May, the blackest clouds I had ever seen began to close in. We had barely started our drive southward to the Gulf when the skies fell on us. For more than three hours torrential rain pelted the car. Leaving Jackson behind, we could not know that, by morning, water would be four feet deep in some homes and that thousands would be evacuated.

What if the nesting of the terns had been wiped out by this storm? High water is a perennial hazard that coastal birds must endure. Fortunately, the airstream that had sucked up moisture from the Gulf of Mexico had passed over the coastline before dumping its burden of water inland.

That morning, at a beachside restaurant near Gulfport, Dan introduced me to Judy Toups, a birder and conservation activist. She was on her third cup of coffee, with a paperback copy of my *Field Guide to the Birds* at the ready for signing. "Things are at their peak right now," she said. "Some of the young are hatching."

After our bacon and eggs we entered the flow of traffic on U.S. 90, which skirts the great beach, and drove for a mile or so to a big sign that said "Nest in Peace." It requested people not to enter the ternery. Three more signs could be seen farther down the road.

We pulled out of traffic onto the sandy verge to watch the hundreds of terns darting and hovering over the white sands. A sea of markers had been put out the day before by the Mississippi Coast Audubon Society: 3,150 sticks, each topped with a short red ribbon. These markers alerted trespassers not to step on the well-camouflaged eggs, usually two in a scrape, which blended with the sand and seashells.

Toups said there would probably be at least 4,000 pairs in the colony this year because some birds were still courting and laying. "There are also small satellite groups forming elsewhere," she added, "but they lack the security they enjoy here in the protected area."

Scarcely 15 feet from the car window a least tern sat on its two eggs while I studied it carefully, with a future painting in mind, noting its trim shape, silvery

*Secretary Ripley discusses the author, the nation's most famous birder, on page 12. An exhibition of Peterson's art will be on display in the National Museum of Natural History April 27-September 3.*

Terns apparently make an effort to match size of the fish they catch to the size of their young.

Two chicks nestle against their parent. The plants are sandspur, spiny enough to injure young birds.

wings, black cap and thin black-tipped yellow bill. Resting my 300-millimeter lens on the car window, I exposed a roll of frame-filling shots for my files. Dan prefers to work from a portable blind, but with my long lenses I found this unnecessary. The car was my blind. The birds had become so used to traffic that even the thundering trucks did not put them up.

Least terns do not nest in quite as close proximity to one another as do most of the other species of terns that colonize the coastal islands. Scanning the maze of markers, I judged the nests to be from six to ten feet apart. Wherever I looked, terns were guarding their eggs or flying to or from the sea. Under a nearby tuft of grass I spotted a newly hatched baby, a tiny ball of fluff half the size of a golf ball.

On an open patch of sand an adult bird, presumably a male, came in with a fish, perhaps an inch and a half long. But instead of feeding it to a baby, he offered it to his prospective mate, who seemed to think it over before accepting it. This "courtship feeding" is traditional among terns, a ritual that leads to commitment. These latecomers to the colony may have had bad luck elsewhere and were trying again.

As we watched, a cloud of terns erupted from their nests and flew out toward the water. It was as though some predator that only they could see had passed by. Within minutes the birds settled back again on the sand. These "dreads," as they are called, are typical of terns as well as some kinds of gulls.

Although least terns, responding to protection after the demise of the plume trade, had long been cruising the Mississippi coast in their never-ending quest for survival, they did not gain a real foothold on the great beach until the early 1970s. They succeeded because of Ethel Floyd, an avid birder and bird bander, who happened to walk down to the beach opposite her home, where she found about two dozen pairs of least terns attempting to nest. Knowing that the eggs would be scraped up with the sprouting grass, she called the Board of Supervisors, who were responsible for maintaining the beach, and pleaded that the birds be given

*The least tern capital of the world*

a chance. Whether the plea fell on deaf ears or was met with amused tolerance is not clear. Although she extracted a promise, the beach crew never got the message. She even went so far as to stand in front of a piece of machinery.

After a year or two of frustration she enlisted the aid of Judy Toups, who has a knack for organizing people and getting things done. Judy was soon involved with a steering committee for the Mississippi Coast Audubon Society; their overriding concern was the least terns. This time they found a commissioner with heart and from that date on, the area occupied by the terns was not scraped until later in the season, after the young had fledged and gone. The number of terns jumped from about 25 pairs in 1973 and 50 pairs in 1974 to 500 or more in 1975. This sudden increase could not be explained by natural reproduction alone. Word must have got around. Prospecting terns from elsewhere were pulled into the colony. They must have been waiting for a place to become available. Black skimmers, distant relatives of the terns, have since joined the terns.

But not everything was rosy. Some people do not read signs. They pull up, get out of the car, walk across the beach, lay down the towel. There were some shocking episodes. Martha Hays, who has a master's degree from Mississippi State University for her work on least terns, once found 150 eggs in a pile on a nearby seawall, including some she had marked for her study. On another occasion two small boys were seen clubbing baby skimmers. When the police arrived they found 28 dead. One day a man came by with a dog. The dog ran into the skimmer colony, picked up one young bird after another and shook it like a rag doll.

Fortunately, such atrocities are rare and the waterfront community at Gulfport is very supportive in its defense of the birds which give its members and others so much pleasure.

Further back, about 100 years ago, this beleaguered little seabird came dangerously close to being wiped out. During the 1870s and 1880s it was slaughtered by the hundreds of thousands for the millinery trade, to decorate the hats of women. (Today, birds' wings on hats would be regarded as barbarous.) As many as 1,200 to 1,400 least terns were shot in a day by individual gunners on the outer islands of Virginia. Under the barrage, the silvery legions melted like snowflakes until there were none.

Protection came after the turn of the century when only a few pairs survived on remote Southern beaches. On New York's Long Island, the last least terns nested in 1882, and then were gone until the first pioneers returned to breed in 1926.

Looking for shade and protection, this chick has cuddled up to an empty root beer bottle on the beach.

*Automobiles arrive on the outer beaches*

But during the intervening years America had switched from the horse and buggy to the motorcar. Outer beaches that formerly were inaccessible except by boat were now connected to the mainland by highways and bridges. Swarms of sun lovers spread their blankets and towels on every strand and some even drove their vehicles over the nesting sites of the terns, keeping the harassed birds in a constant state of alarm.

For this reason, most least tern colonies up and down the Atlantic and Gulf coasts from Texas to Maine are now on the undisturbed barrier islands and isolated sandspits, or on spoil banks dredged up for navigation channels along the coast.

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# RENAULT

**THE ONE TO WATCH**

The intriguing thing about the Mississippi terneries is that they are on the mainland within a few feet of U.S. 90, one of the state's busiest highways. This seeming paradox aids their survival. Any marauding raccoon or cat has to cross four lanes of heavy, speeding traffic to get to them.

As I watched the aerial procession of least terns coming in from the sea and others going out to their fishing grounds, I thought of the small population of these delicate birds in my home state of Connecticut, where the species is rated as endangered, or at least vulnerable. In 1982 there were about 400 pairs of least terns in 11 colonies in Connecticut. The number dropped to 225 in 1983, for reasons that were quite clear to me when I revisited our local colony at Griswold Point near Old Lyme.

When Griswold Point was taken over by the Nature Conservancy and the summer squatters were evicted, the least terns found the abandoned tent area to their liking. Twenty pairs raised their young successfully in the summer of 1982. But when I returned the following June to see how things were going, the place was strangely silent. I found not a single tern. Coarse tussock grass had invaded the bare areas where they had nested. There had been no high storm tides to sweep invading grass from the crown of the beach and deposit fresh sand and shell. Although signs requested beach strollers to stay out, no one had put a hoe or a scraper to work. Two pairs of piping plovers had found places to lay their eggs but the least terns had been forced to go elsewhere.

Spoil from dredging operations, judiciously dumped, can help terns, skimmers and other beach-nesting birds, at least temporarily. But if such spoil banks or islands are not bulldozed or raked at the end of the season, grass or sedge may take over unless new fill is dumped. This succession of plant life may have its compensations, however. Terns will move out, often to be replaced by herons and egrets.

The Mississippi experiment is an outstanding example of what can be done to help colonial birds. Today the residents of Gulfport, Biloxi and Mississippi's "Riviera" are proud to call their great man-made and managed beach the "Least Tern Capital of the World."

Baby terns take refuge in vegetation along the seawall that divides the beach from major highway.

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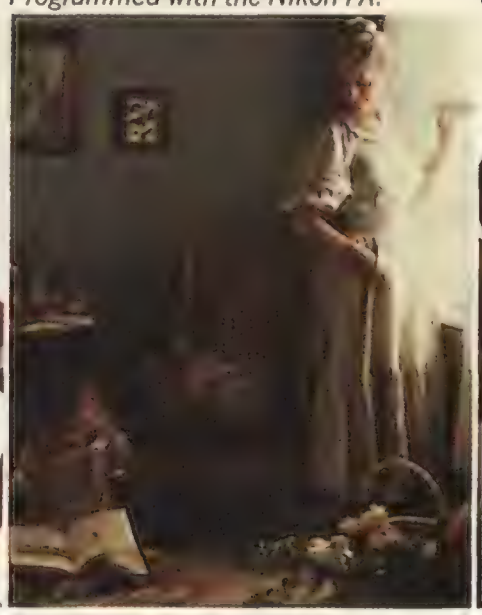
*High contrast. Shot in Aperture-Priority with the Nikon FA.*

*Back light. Shot in Programmed with the Nikon FA.*

*Available light. Shot in Programmed with the Nikon FA.*

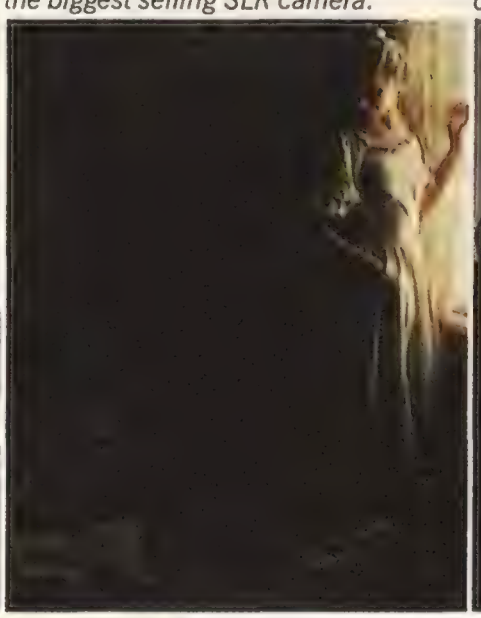


*Sun-in-frame. Shot in Shutter-Priority with the Nikon FA.*

*Shot in Aperture-Priority with a leading multi-mode SLR camera.*

*Shot in Programmed with a leading programmed SLR camera.*

*Shot in Programmed with the biggest selling SLR camera.*



*Shot in Shutter-Priority with a competitor's "top-of-the-line" SLR camera.*

*The pictures you see here are actual unretouched photographs, shot simultaneously without any exposure compensation. ©Nikon Inc. 1984.*

# See.

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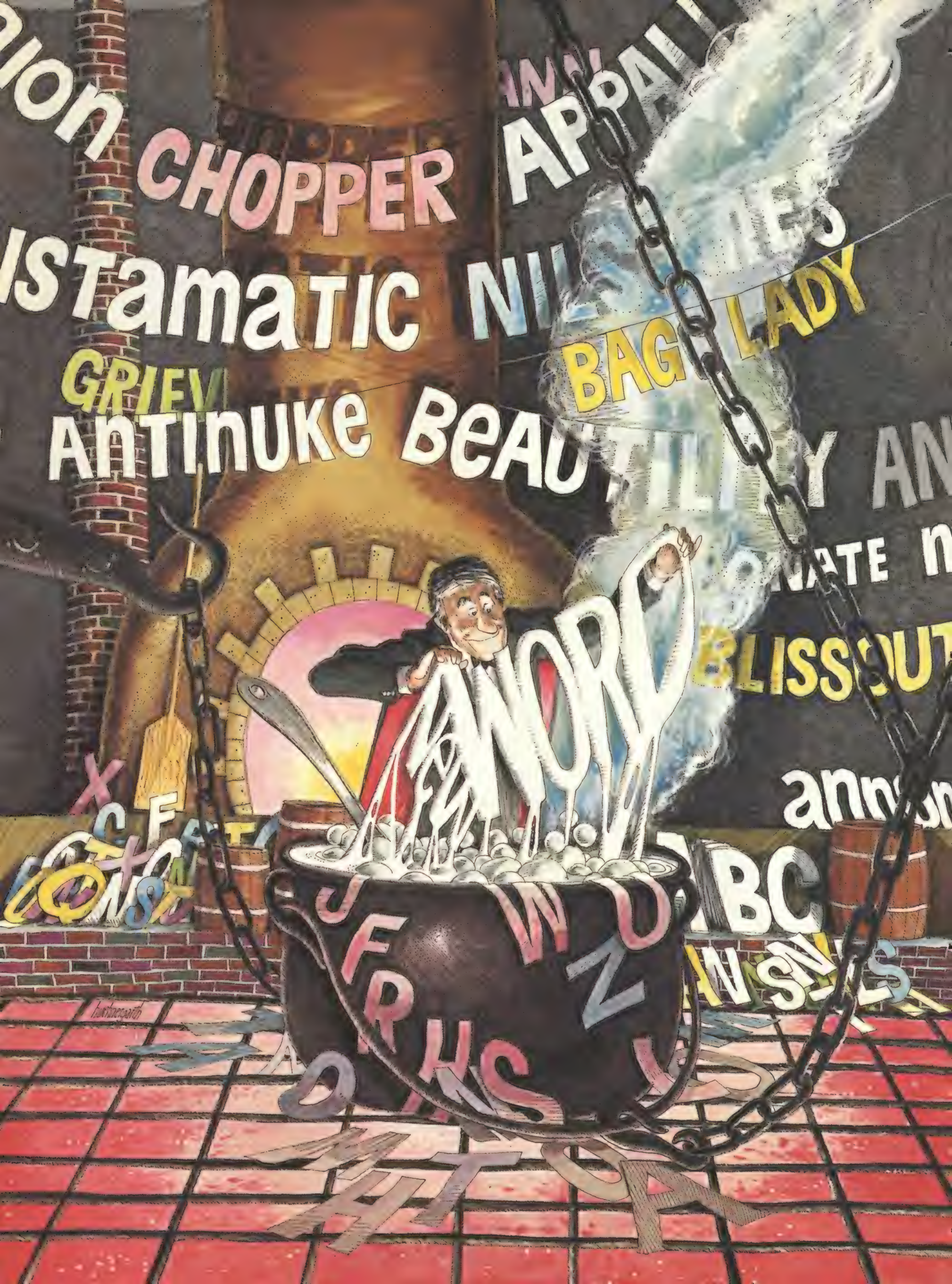
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*By James J. Kilpatrick*

# Fun and games from the watched pot of language

*Advice for people who love crosswords, want a homophone of their own, or simply yearn to use the word* scopelism *at dinner*

A friend in Philadelphia recently got a gift copy of *A Pleasure in Words* by Eugene T. Maleska, for many happy years the puzzle editor of the *New York Times*. Thumbing back to front, which is how many word beagles browse through a promising coppice, my friend saw a chapter on how to construct crossword puzzles, and he was hooked at once. He ruled up a blank square of 15 by 15 little boxes; he inked in a symmetrical pattern containing a permissible 42 black squares and, following Maleska's tips, went to work.

"I never dreamed it would be so hard," he wrote. "It's no trick to find words with alternate consonants and vowels, which is one of Maleska's hints for beginners, but when Maleska stacks up such going-across words as *parapet, Alabama* and *tetanus,* they make words going down. When I stack up such words as *aware, risen* and *toned,* I don't get much of anything."

After five nights of hard labor, my friend finished his first puzzle. He enclosed a copy of the misbegotten thing for my inspection, but it was more than I could crack. After all, who ever heard of *gid, puisne* and *orgeat*? In his puzzle a young man was an *ephebe.* He had rivers and mountains known only to God and the *National Geographic.* But when I frittered away a frustrating hour, trying my own hand with a sackful of Scrabble tiles, I did even worse. Let us raise a glass to the professional puzzle makers who give us so much enjoyment.

"Descriptive linguists are as happy as master brewers. They cannot keep up with the bubbles and froth."

Writers, of course, need never apologize for time spent in word games. Anagrams, cryptograms, double-acrostics, crossword puzzles, palindromes—all provide hours of innocent and sometimes maddening pleasure. I know one venerable scribe, not yet over the hill, who plays Scrabble with his wife for the stakes that once enlivened Elizabethan boudoirs: he plays her for her virtue. And even the easiest crossword puzzle may return an unexpected dividend in the discovery of a new word or the rediscovery of an old one. I never knew that *irk* was a noun until I was sitting in the Birmingham airport doing a puzzle in the *News.*

If this sort of thing amuses you—and it should amuse you—a wide literature is out there. I'd mention *The Joy of Lex* by Gyles Brandreth, for instance, published by Morrow in 1980. Brandreth is a fiendishly witty English journalist who evidently spends most of his waking hours in word play. Maleska's book is another treasure. In 1975 Willard R. Espy brought forth *An Almanac of Words at Play.* Joseph T. Shipley published *Playing with Words* in 1960 and later followed with *Word Play* in 1972.

One of the most puzzling forms of word play that Shipley takes up is the rebus. Among his classic favorites from the 1960 volume is a letter which is addressed as follows:

Hill
John
Mass

Until the use of rebus addresses was forbidden when World War I began (for reasons that are today obscure), wits used to challenge the post office with rebuses like that. A letter so addressed, when you approach it with a wacko knack of triple vision, could go only to John Underhill, Andover, Massachusetts.

Shipley has found rebuses as far back as the times of the Persian Empire. "Perhaps the neatest of all word rebuses," he says, "is the French *Ga!*" If you have the rebus eye, you will think it significant that the *G* is capitalized; it is a large letter. The *a* is lowercase; it is small. From that you will move to *G grand, a petit,* and then (if you know how the French pronounce *G*) it will hit you: *J'ai grand appétit.* In brief: I'm hungry.

Let me recommend another book: *-Ologies & -Isms,* put out under the editorship of Laurence Urdang. It is in fact a work of serious scholarship, in which Urdang and his colleagues have rounded up 4,000 words ending in *-ologies, -ities, -isms, -ics,* et al. The book is thematically arranged, so that if your need is to come up with the word that has to do with the science of making wine, you hunt under wine and find *oenology.* The fellow who contrives puzzles may be engaged in

*Illustrations by John Huehnergarth*

*enigmatography*. I myself happen to be into *vexillology*. You should look it up.

Josefa Heifetz Byrne had a great time in 1974 putting together *Mrs. Byrne's Dictionary of Unusual, Obscure, and Preposterous Words*. At random, from her bag of baubles, I give you *exosculate*, to kiss heartily; *mancinism*, left-handedness; and *scissile*, capable of being easily split. It is hard to know how we could get along without the words that follow *scissile*: *sclaff*, *scorbiform*, *scolecophagous*, *scolion* and *scollardical*, though it might be difficult to drag *scopelism* into a dinner conversation. It means "rockiness" or "the scattering of stones on a field to hinder farming."

A question on the run: What's unusual about *unquestionably*? Answer: It contains all five vowels and the letter *y*. I leave it to you to discover why *facetious*, *abstemious* and *abstentious* are collector's items.

If there is a cheaper hobby in the world than the collection of homonyms, I have yet to find it. Homonyms (also called homophones) are different in meaning but pronounced alike and often spelled alike. We have *quail* the noun and *quail* the verb. Anyone can *post* a horse, *post* a letter and *post* a notice; indeed, it is possible to *post* the notice on a *post*. Some homonyms, however, are different in spelling as well as meaning: *to*, *too* and *two*; *so*, *sew* and *sow*; *air*, *ere* and *heir*; *bole*, *boll* and *bowl*; *read*, *reed* and *rede*; *rain*, *rein* and *reign*; *for*, *four* and *fore*; *seas*, *sees* and *seize*; *rode*, *road* and *rowed*; and so on. A friend, hot for homonyms, cites the passenger who arrived at a railway station at 1:58 for a 2:02 train. The passenger had to wait from two to two to two-two. Her friend had to wait from two to two to two-two, too.

Judy Ceniceros wrote me from Portland, Oregon, that she has collected 600 of these things, "but not with any sense that I had exhausted the possibilities." Her collection includes about 60 three-way homonyms and even a few prize four-way examples: *or*, *oar*, *ore*, *o'er*; *right*, *write*, *rite*, *wright*; *rase*, *raise*, *rays*, *raze*; *you*, *yew*, *U* and *ewe*.

She noted other word categories that are "fun to play with, such as pairs of anagram-synonyms (words that contain their own synonym), such as *replicate*, *repeat*; *retrogression*, *regression*; *appropriate*, *apt*." She found "about 50 of those without trying."

She continued: "Yet another category of words, known as homographs or heteronyms, is made up of words that are spelled the same but pronounced differently. Often the switch comes in the change of parts of speech, such as from noun to verb, as in *desert*,

A working contronym: "When we say that a sailboat is *fast*, do we mean that it is speedy or tied up?"

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The rebus: "If you know how the French pronounce *G*, it will hit you—*J'ai grand appétit*," I'm hungry.

*abuse, wind.* Sometimes it's from noun to adjective, as in *invalid.* . . . Two nouns: *primer, sewer.* Other combinations: *wound, tear, read.*"

At one point in my column, I got off on the subject of "contronyms." It turns out that hundreds of word hounds hunt them all the time. A contronym is a word that embraces contradictory meanings. *Moot,* for example, can mean both arguable and no longer arguable. To *cleave* is to whack in two and also to stick together (". . . let my tongue cleave to the roof of my mouth"). When a door is *bolted,* it is locked in place; when a horse has *bolted,* he's taken off.

Contronym collecting has been going on for years. An article in *Word Ways,* a quarterly published by A. Ross Eckler, recalls the researches of Jack Herring in 1962. Among his contronyms were *fast* and *scan.* When we say a sailboat is *fast,* do we mean speedy or tied up? When we *scan,* are we looking intently or looking casually? Applied to fabrics, *wear* means both to last under use, and to decay through use. In everyday use *commencement* is a beginning. It becomes an ending only in academia. On the golf course, a *handicap* is an advantage; elsewhere it's a disadvantage. And speaking of golf and how you're feeling today: What do we mean by *below par* and *above par*? When we *temper steel,* we make it harder; when we *temper justice,* we make it softer. When you *wind up* a watch, you start it; when you *wind up* a speech, you stop it. The word *sanguine* means both cheerful and murderous.

Isn't English wonderful? It is wonderfully confusing—and among the confusions is something called *amphiboly.* To quote *Webster's Third,* an amphiboly is an "ambiguity in language; a phrase or sentence susceptible of more than one interpretation by virtue of an ambiguous grammatical construction." Example: *Nothing is too good for my mother-in-law.* There's also the advertisement that tells us, presumably unintentionally, that *nothing is more effective than Esoterica.* A friend in Fort Lauderdale, Kathryn Passarelli, was impressed by the ad. "Naturally, I use nothing," she said. My own pet amphiboly became a popular song toward the end of the 1970s: *If I said you had a beautiful body, would you hold it against me?* An Indianapolis newspaper item reported that a suspect had been arrested "for entering a bedroom of the opposite sex."

On the conservative side of the semantic fence, many of us tend to make Great Harrumphing Noises about coinages that come along, and roll our eyes at the degeneration of the mother tongue. This is mostly buncombe. We howl, with some justification, at *disasterize* and *prioritize,* and we scoff at coinages stamped from semantic lead. But any person who loves words is bound to love new words—and change is natural to any living language.

*Word coiners Wolfe and Mailer*

In 1973 Barnhart/Harper & Row produced *The Barnhart Dictionary of New English Since 1963.* It contained 5,000 new words (or new usages) that then were not contained in standard dictionaries. The editors had planned to wait ten years before a second edition. The language couldn't wait. In 1980, three years ahead of schedule, out came *The Second Barnhart*—and it contained *another* 5,000 words or usages that had arrived in the meanwhile.

In a note on coinages, the editors remarked upon the difficulty that lexicographers encounter in tracing the inventors of new words. Somewhere in the mazes of a great corporation or a large advertising agency are the individuals who thought up *Instamatic* and *Granola*; they remain unidentified. But some coiners are known. Norman Mailer invented *factoid* to mean a published statement taken to be a fact just because of its appearance in print. Tom Wolfe coined the *me decade* to

*This article has been adapted from columnist James J. Kilpatrick's book* The Writer's Art, *due next month from Andrews, McMeel & Parker.*

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capture the self-centeredness of the 1970s. Not surprisingly, perhaps half of the latest Barnhart collection comes from science; here the coinages fly by at supersonic speeds, and many of them leave no more than a fleeting boom behind.

New coins of speech are minted everywhere. These are among the "A" entries in the *Second Barnhart*: *AC/DC* (bisexual), *acid rain, anchor* (to anchor a TV program), *anorexic, antinuke, antiterrorist, après-sun* and *après-swim, Archie Bunker* and *armpit* (a grimy or undesirable place, as "Muncie is the armpit of Indiana"). Among the "B's" are *bag lady, ball-park figure, basket case, beautility* (invented by Ada Louise Huxtable of the *New York Times* as a combining form of *beauty* and *utility*), *big enchilada* (e.g., John Mitchell, in Watergate parlance), *bliss out* and *Brand X*.

How many will survive? Well, I'd give *bliss out* a half-life of maybe five years. It appears to be closely related to *make out*, which I understand to mean what we did in high schools in the '30s when we *pitched woo*. The indefinitely adverbial *out* also appears safely ensconced in *bug out* and *freak out*.

In the "A's" the Barnhart editors did not pick up *appallment*. When Colman McCarthy of the *Washington Post* once used *appallment* in a column in 1980, Michael Gartner, then editor of both the *Des Moines Register* and *Tribune*, sent him a reproachful note; Gartner was filled with appallment. McCarthy wrote back, saying don't blame me; blame Robert Penn Warren. Sure enough, Warren owned up. But I don't believe *appallment* will fly, even if Robert Penn Warren did invent it. I'd like to think about it awhile. *Shockment? Dismayment? Disgustment?*

"Any person who loves words is bound to love new words—and change is natural to any living language."

Suspect neologism: "I don't believe *appallment* will fly, even if Robert Penn Warren did invent it."

New verbs often just drift to the surface of contemporary speech. Out of labor-management contracts comes a new use of *to grieve*. Doyle Alexander, then a Yankee pitcher, once was fined $12,500 for breaking several fingers when he banged his hand in frustration against a dugout wall. "A player can grieve a fine of this size," the Associated Press reported. In fact, Alexander did grieve—and won.

As a verb, *helicopter* has been around since 1926, and now appears regularly in the press: "The President and Mrs. Reagan helicoptered to Camp David." *Webster's Ninth New Collegiate* dates *to chopper* from 1955. It turned up a year or so ago in *The New Republic*, where Gregg Easterbrook complained that the television networks need reporters at the level of the foot soldier: "TV news will chopper in a megabucks electronic SWAT team whenever it learns something is happening, but without some print reporter's tip-off, how will it know?" The *Seattle Times* has created a related verb: "President Reagan will Air Force One his way into the area Tuesday to address the American Legion convention."

From the world of politics comes the abbreviated *to primary*: Wisconsin voters will primary this month. When we all accept the idea that American voters will

*general* in November, I will buy *to primary* in the spring. But not before. At a computer training center in Washington, D.C., an instructor held a seminar in *futuring*, a construction I would just as soon past. I'd also like to bury *to impact*, as in "The Fourth Avenue YMCA [in Birmingham, Alabama] is positively impacting the lives of Birmingham youth." Poor youths! But I have embraced *to total*, in the sense of to wreck an automobile totally. In the context, it's a good vivid verb, and ought to find its place. I am less certain about a related formulation: "There is a *disabled* blocking the right lane of the expressway." Maybe so. The usage saves the air-time millisecond that might otherwise be needlessly expended on *disabled car* or *disabled vehicle*, and the meaning is as clear as the extended meaning of another new word, *giftable*.

I have no idea how many of the Barnhart 10,000 will still be in popular or technical use in the next generation. To browse through the fourth edition of Mencken's *The American Language* (1936) is to be impressed by the number of desert flowers that have blossomed briefly in our speech and then disappeared. Mosquitoes once were universally *skeeters*; we had a Southern doctrine of *secesh*; a newspaper writer was an *ink-slinger*. All these vanished from common usage long ago. More recently, newspapers had a good time with the slang of the Valley girls in California. Whole vocabularies were compiled of Valleyspeak. Now the Valley girls have grown up and the glossaries have grown old.

All this is good. My impression is that English never has been healthier. It is, to be sure, a disorderly language. Most of our "rules" for spelling and pronunciation are so riddled with exceptions that they are no rules at all. We punctuate as we damn well please. We turn nouns into adjectives and adjectives into nouns. We borrow words of specialized meaning—*parameter* is an example—and we never get around to returning them. Mr. Reagan's advisers reminded him before his forensic bout in 1980 with Mr. Carter: "Televised political debates focus on image attributes more than issue positions." What is an *image attribute*? What is an *issue position*? But it is all part of a continuing process of fermentation. Descriptive linguists are as happy as master brewers. They cannot keep up with the bubbles and froth.

Workable neologism: In proper context *to total* is "a good vivid verb, and ought to find its place."

# A HERITAGE OF

## The C

At our family winery in the beautiful Sonoma Valley, we have for three generations produced wines in a style that complements food. It is part of our heritage and extends far beyond our eighty years in California to a small village in Northern Italy. It was in Farneta,

the birthplace of my grandfather, Samuele Sebastiani, that the dream for Sebastiani Vineyards was formed. It was this place that shaped and defined a style of winemaking that would become uniquely ours.

*Top: The Monastery of Farneta, Italy.*
*Below: Sam Sebastiani (left) during the 1983 Farneta harvest.*

During the 1983 harvest, I joined the families of Farneta in the vineyards and rode with the grapes into La Certosa di Farneta, the 12th century monastery where young Samuele learned to make wine. Here, winemaking techniques have changed little over the centuries and the traditional pairing of these local wines with local foods is a source of great regional and family pride.

The heart of this richly colorful district is the ancient walled city of Lucca. There, my wife Vicki and I explored the many twisting streets and courtyards, with their dozens of markets and restaurants. As we walked, we came to fully appreciate that part of our heritage which began near this city a century ago.

Since my grandfather founded

*Towers and rooftops of Lucca.*

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*Vicki Sebastiani (center) in the Lucca marketplace.*

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*By Neil Hollander and Robert MacLean*

# Mud-caked Amazon miners wallow in newfound wealth and power

*From a 200-foot-deep pit in Brazil's jungle,* garimpeiros *happily extract gold by the ton—and concessions from their government*

Gold fever has struck Brazil. The same dream that fueled the "rush" to California and the Yukon once again plucks men out of the safe and ordinary. It now sends them into the jungles of the Amazon, obsessed by the belief that somewhere just beyond the known lies the giant mother lode—streams that glisten with gold dust, nuggets as big as a fist, all waiting for a miner's shovel.

The fever springs largely from a single source—Serra Pelada (Naked Mountain)—a huge, open-pit mine in the Amazon that is probably the richest single gold find of this century. In a few years it has produced enough gold to make an impact on Brazil's international debt and bolster confidence in her ability to repay it. No one knows how much gold has been extracted, since much of it is smuggled out, but its total value certainly exceeds half a billion dollars. And this gilded reservoir is by no means dry. More gold is coming out of the mine than ever before. For gold-struck Brazilians, Serra Pelada is the symbol of hope, a tropical version of the Klondike where everyday men can and do become millionaires.

The stories of instant riches multiply into myths. A former peasant now buys waterfront hotels on the Copacabana and signs the check with a thumbprint. An ex-barber builds a million-dollar brothel; a teenager buys the plantation where his parents work as peons. But there is often reality behind the tales. Many men have turned their backs on farms and *favelas* (slums), disappeared into the Amazon and emerged with fortunes. The peasant does, in fact, own hotels, and the brothel exists.

"Look at it this way," a former truck driver said. "If I buy a ticket in the lottery, I have one chance in a couple of million, right? Here in Serra Pelada it's one in a thousand, maybe less. The way I see it, life's a gamble, and I'm just following the odds."

A few years ago Serra Pelada was on the edge of the frontier, 50 miles from the new Amazonian highway, a small mountain in the rain forest indistinguishable from thousands of others. According to what is now

Each of these chunks, held here by government buyer, consists of melted-down gold from a single claim.

Bearers move sacks, each one filled with seven shovelsful of dirt, up from the Serra Pelada mine.

*Photographs by Harald Mertes and Peter Frey*

*Wallowing in the Amazon's mud and gold*

folklore, the man who played the role of John Sutter was a rancher named Genesio. In 1978 he cleared the land around the mountain and moved in with a hundred head of cattle. There are several versions as to how he found gold. The first maintains that he unearthed a nugget while putting in a fence, and that a posthole near his outhouse was the beginning of the pit. The second says that his daughter actually performed the act of genesis. While hauling water from the creek after a heavy rain, she picked up an unusual piece of rock that turned out to be a rather large nugget. Another holds that a vaquero working for Genesio spotted a nugget while he was washing out a tin plate in river water. Whatever the case, one day in 1980 Genesio took some of the gold into the nearby town of Marabá. The rush began.

Within a week a thousand *garimpeiros* (miners) were on the site, and within a month 10,000 men were carving Serra Pelada into claims. Both the mountain and the stream have been consumed by the mine, and in their place is a giant wound in the jungle, a hole big enough to accommodate one of the great pyramids.

More than 40,000 men now work in the pit, and beneath their uniform muddy glaze is a cross section of the world: doctors from Rio, teachers, shopkeepers, farmers from the impoverished northeast, and foreigners from Europe and the Americas. The mine is a melting pot, and anyone can be a *garimpeiro* as long as he gives up what he was for the sake of gold.

The miners have become a breed apart, nomadic prospectors who can now be found all over the Amazon wherever there are whispers of gold. Fiercely individualistic, they are proud to have escaped the facto-

*The authors, both filmmakers, journeyed to Serra Pelada last November, where they made an hour-long documentary, entitled* Gold Lust, *about the miners.*

Trudging in an endless loop, miners carry 100-pound bags of dirt from pit floor, then return for a new load.

Some bags hold refuse, to be dumped directly onto huge ridge of tailings; others contain precious paydirt.

Huts of claim owners (foreground), which also shelter workmen, abut the rear of Millionaire's Way shops.

Sluicers, each working for an individual claim owner, retrieve the finer particles of gold from paydirt.

ries and *favelas* and are famous for being cantankerous and unpredictable.

Yet, astonishingly, this motley and unwieldy group has suddenly emerged in Brazil as a political force to be reckoned with. Last year, the government moved forward with plans to turn Serra Pelada over to a huge state mining firm on November 15. With mechanized equipment, the firm expected to double gold production this year—but it would have meant the end of the *garimpeiros* at Naked Mountain.

*For miners, the new taste of political power*

A howl of protest went up from the miners themselves, and also from mining unions and legislators who argued that it is individuals, not monopolies, who have discovered most of the Amazon gold sites. In a show of unexpected unity, the Serra Pelada *garimpeiros* staged a protest march to Brasília, the capital. The government backed down in early November, and the miners are still celebrating the victory. For them, Serra Pelada is now as much a political stronghold as an economic one.

Despite its chaotic appearance, the mine is well organized, neatly divided into more than a thousand separate claims, each one numbered and a precise two-by-three meters. The grid was established in the beginning when Serra Pelada was still a *serra* (hill), and the dimensions preserved as the claims slowly sank to more than 200 feet below the jungle floor.

With literally miles of boundaries crisscrossing the mine and thousands of men constantly hauling out more dirt, claim stakes must be repositioned daily, and the result is a perpetual war of measures. Every claim owner carries a meter stick, and he uses it more often than a shovel, protecting his six square meters of territory like a jealous viper. A few inches in either direction can easily be the difference between bust and bonanza, for the gold is not uniformly distributed. In fact, quite the opposite is true. The dust is found in uneven layers, and the nuggets are usually uncovered in clusters, often one on top of the other. A fortune may come from one claim, while those adjacent to it might yield nothing.

Most claims are registered in the name of an individual, but in reality the system of ownership is far more complicated, a kind of share-mining that involves not only everyone in the pit, but most of the bush pilots, truck drivers, prostitutes and merchants within a radius of 100 miles. In economic terms, Serra Pelada resembles a miniature stock market whose negotiable assets are worth millions of dollars.

The basis of the system is the fact that no claim owner can operate alone. Despite the small size of his claim, he needs 20 to 30 men to work it—a half-dozen

*Overleaf:* Miners swarm over "the Malvinas."

*Wallowing in the Amazon's mud and gold*

to dig in relays and a dozen or more to haul out the dirt. All work is done by hand, and most *garimpeiros* are little more than beasts of burden, endlessly carrying sacks full of dirt to be dumped or sluiced or panned. It is the same technology, or lack of it, that was used in the Klondike, crude yet productive. The mine yields more than a ton of gold a month.

Few owners can afford a large payroll, especially when the wages are double what they are elsewhere and must be paid daily. Instead of a salary, they prefer to pay in percentages: one percent, perhaps, to a bearer who agrees to work for a season, and two percent to a digger. The terms are, of course, negotiable, and the contracts written on whatever is handy—the back of a cigarette pack or the margin of a porno magazine. These crumpled bits of paper become tender, a scrip that can be sold or traded. For the bearer, who is at the bottom of the social order, his percentage is his lottery ticket, a chance to escape from drudgery. If the claim strikes it rich, that single point may be enough to buy a farm, a shop or even a claim of his own.

The owner of the claim must also provide his men with a barracks—a simple shelter where they can sling their hammocks—and food, at least two hot meals a day. When the food runs low, the owner often strikes up a deal with a local farmer or merchant and parts with a few more percentages. Plane rides, machinery, doctors and medicine can also be paid for with points.

Being able to hand out percentages whenever it is convenient is obviously tantamount to printing money, and that temptation few men can resist. A claim owner who is convinced that he is only a few feet away from paydirt—as most always are—is certainly not going to hesitate to trade points for supplies, and a merchant whose ears are burning with stories of instant wealth will often accept scrip more readily than cash. If the *garimpeiro* doesn't find gold, the shareholders have nothing to claim, and if he does make a *bamburro* (strike) the mine owner gambles that there will be enough gold to make a settlement and pay everyone off.

One miner who dug up a $2 million bonanza was immediately confronted by a crowd whose scrip totaled 132 percent. "I guess there's still more points around," he admitted. "The rest of them haven't heard about my *bamburro*. They will. Then they'll come too, and we'll all talk and argue. The next day they'll come again. And the next. Eventually we'll make a deal. Who knows, maybe I'll have another *bamburro*, and they'll get another share."

The mine floor has its own geography, more than a dozen separate regions, each with its own record of bonanzas. The richest part is the lowest, a narrow strip nestled against the cliff usually awash with mud; the strip is called the Malvinas or Falklands because of the constant warfare that occurs there. Boundary stakes often disappear into the slime, and nuggets can literally flow from one claim to the next. Recently more gold has come out of the Malvinas than all the other areas of the mine put together. Some finds—if one can believe the stories—surpass the spectacular.

Take Manuel, a former boxer from São Paulo: "My *bamburro* happened on a Sunday," he said, "when the pit was empty. A strange voice told me to go to my claim and dig. I did—right in the center. With my first shovelful of dirt, I found a nugget. It weighed about a kilo [2.2 pounds]. I ran back and got the others, then we all started to dig. An hour later we took out a couple of 40-kilo nuggets, big as footballs. Then we hit the giant—120 kilos. I cut it into six pieces before anyone got a chance to see it. And we kept on digging—all through the night. The next morning when the other *garimpeiros* arrived to work, we had over 600 kilos of gold!"—worth about $8 million.

*A nugget the size of an attaché case*

The large nuggets disappear quickly because the miners fear that the government will seize them for their "historic" or "museum" value. As soon as miners uncover anything bigger than a baseball, they quickly saw it into manageable lumps. Certainly a number of "giants" have disappeared in this manner, and rumor records that one the size of an attaché case vanished before anyone had a chance to weigh it.

One giant that did go on official record was unearthed last fall by 23-year-old Julio de Deus Filho. The nugget he dug up weighed 62.3 kilograms. Filho was paid $1.25 million by the government for the 80-percent-pure find, after which he beat a hasty retreat from the area, fearing thieves and greedy relatives.

Each working claim has its own compound, hence

Georgian Bay

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Following custom, *garimpeiro* who struck it rich wears a medal that he bought with his new wealth.

the structure of the mine is replicated in the shantytown that surrounds it. The main street is appropriately called Millionaire's Way, and the center of town the Plaza of Lies, where the miners gather in the evening to exchange their questionable tales.

In the early days the town had a lawless, Wild West flair. Most miners carried guns and used them to celebrate every nugget they found, and, when necessary, to settle unpleasant debts. Camp followers, con men and gamblers soon moved in, and the ragged little town resembled Dodge City on a Saturday night.

Finally its notoriety broke into the national press, and the government stepped in with a heavy hand. In a single stroke drugs, liquor, gambling and women were banned. Strangely enough the *garimpeiros* hardly protested, undoubtedly realizing that it was in their own best interests to keep the parasites at bay. The miners still have guns, but they are discreetly out of sight in their pouches where they carry their wealth. Millionaire's Way is now safe and perhaps a little too serene, and Serra Pelada has become an island of men whose only vice is gold.

The *garimpeiro* who leaves the mine with a pouch full of dust must now run a gauntlet of shantytowns, clusters of bars and brothels built specifically to strip him of his wealth. Many *garimpeiros* get no farther. After months of toil and hardship, they easily yield to the first temptation, and with total abandon happily run amok. The tales are legion, many so recent that they haven't had the time to become apocryphal.

"I saw a *garimpeiro* arrive in Marabá once with a knapsack full of bills. He bought himself a bottle of whiskey and drank it while he tied his money into a long chain of knots. Suddenly he gets up and runs through the streets, dragging his *bamburro*—millions of cruzeiros—shouting that for once money follows him instead of the other way around. He fell asleep in a bar, and we stuffed the money back into his knapsack." Probably it was all there when he woke up. Like the Klondike, the Amazon has its own special code.

Undoubtedly the miner spent his bonanza quickly—even the most resolute *garimpeiro* cannot endure more than a few weeks of sustained debauchery. As the money changes hands, it will feed the fantasies of every bartender, tout and taxi driver he meets, and send more men into the jungle to seek their El Dorado.

The huge mining concerns that are also moving into the Amazon cast envious eyes on the site where the *garimpeiros* have been working. The tailings—the thousands of sacks of earth the bearers haul out of the pit and discard as waste—contain valuable, high-grade ore, a ridge of it encircling the pit and just waiting for men with modern mining equipment. As much as 60 percent of the gold has been left behind simply because the *garimpeiros* lack the means to retrieve it.

They know what has slipped through their fingers, but they also know that deeper in the jungle are other Serra Peladas, more mountains of gold that they can exploit with only a shovel, a pick and a pan. The Amazon is finally beginning to disgorge its wealth, and deeper still, close to the Andes, are the fabulous El Dorados that once fed the appetites of the gold-hungry Incas. Generations of adventurers have searched for them, and more than likely it will be the *garimpeiros* who will finally make the discoveries.

Gold hunger shines in eyes of exhausted digger; each miner feels riches are only inches or minutes away.

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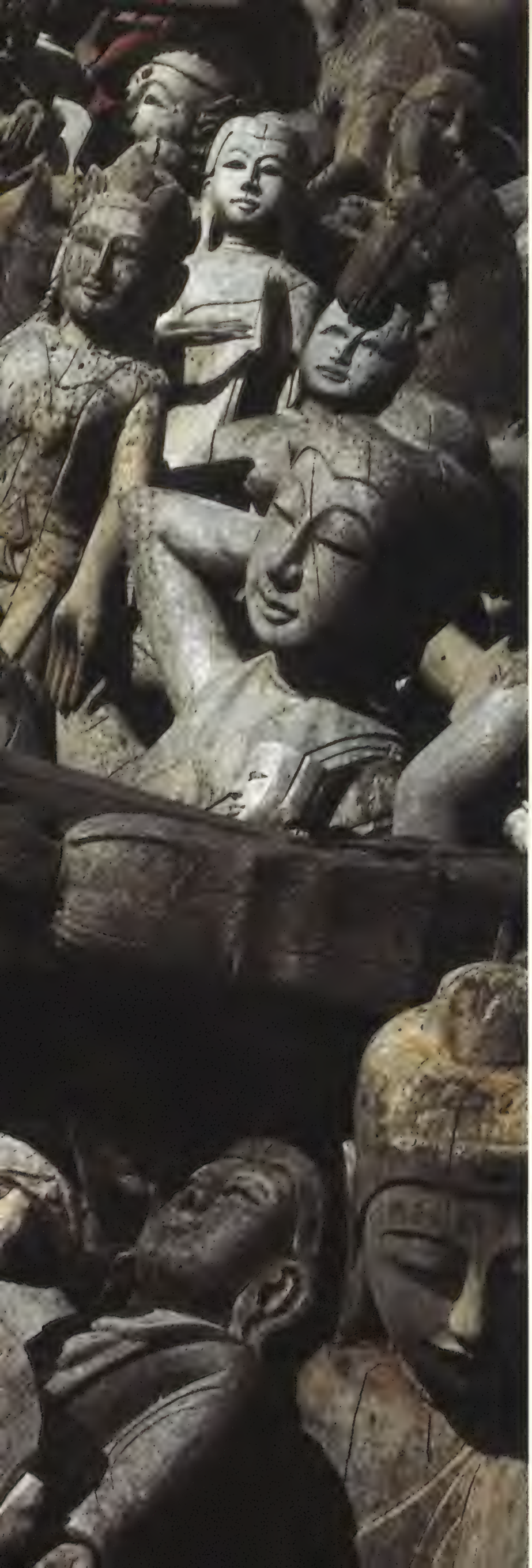
The Civic Wagon



*By David Alexander*

# Immediate antiques as good as gold are a Thai specialty

*Rural craftsmen are meticulously making their instant artworks so much like the originals that even experts can't tell the difference*

A barefoot village girl aims a homemade kerosene torch at a flight of spirits. With each lick of the flames the wood figurines—delicately carved but still raw-looking—seem to mellow and age a hundred years. She works to the accompaniment of wood-carvers' tools clanging pleasantly through this community nestled below the hills of northern Thailand.

On the central rice plain in the province of Rat Buri, a young painter quietly studies a 17th-century Chinese bowl and then with deft and flowing strokes duplicates its scene of misty mountainscapes on an identically sized and shaped bowl not long off the potter's wheel.

And in the heart of Bangkok, Thailand's capital, a thin, intense sculptor proudly produces for us the head of Brahma, or, more precisely, his copy of a Cambodian masterpiece wrought ten centuries ago. Completed in less than a month, he hopes to sell the piece for $15,000. A darkish funguslike growth scums the godly head, evoking images of hoary ages spent in humid jungles—and of a startling recent find.

"Just some secret chemicals and three days in the sun," explains the brilliant stone-carver.

These replicas of a Buddhist temple decoration, a blue-and-white Ming Dynasty bowl and an Angkorian

Diversity of figures in the Burmese style are placed outside to brave the elements and to age authentically.

*Photographs by John Everingham*

*The fine art of making new antiques*

Outside northern city of Chiang Mai, an artisan chisels on a wood sculpture of a worshipping figure.

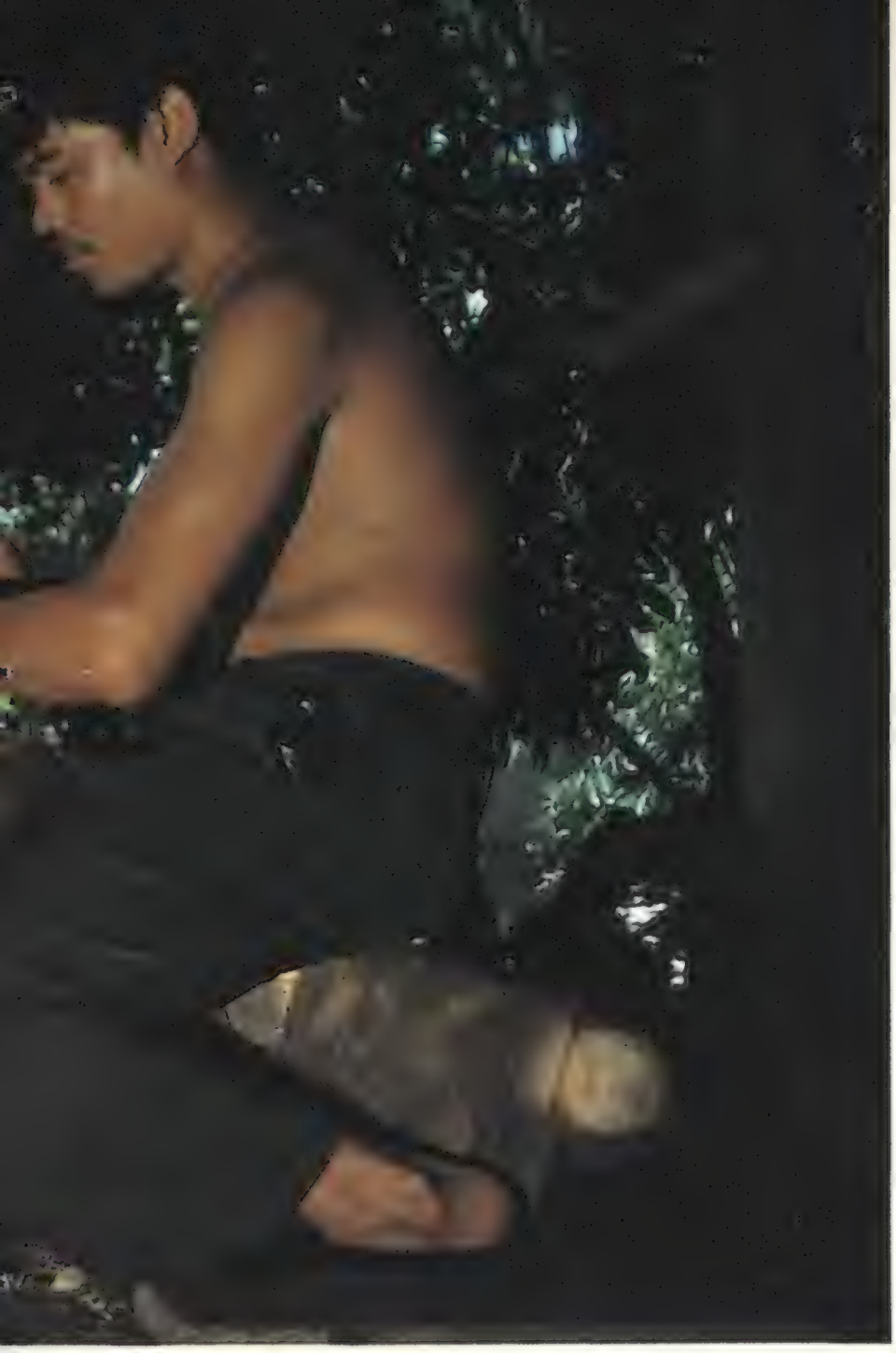
A young craftsman, already adept at his trade, works skillfully on copy of ancient head of Buddha.

sculpture are headed for the freewheeling, masterful and highly prosperous marketplace of Thailand's "instant antiques."

The odds are high that these or similar pieces will find their way into living rooms to be oohed and aahed over as expensive originals. Thousands have. A few may even materialize in museums. Thai experts, not without a pinch of pride in native artistry, are convinced that some pieces are so displayed.

Thailand's instant antiquities, numerous and versatile, have been both cursed and commended. Understandably, the outcries come from tourists, museum buyers and serious collectors who discover they paid antique-market prices for yesterday's product. One collector of antiquities recalls having paid $100,000 for several Funan-era stone sculptures which turned out to be fakes. Their actual value was $2,000—at most. But what is a galling swindle to the taken has its redeeming graces, as we shall see.

"Sometimes we make them more beautiful than in



Chiang Mai is a center for reproductions, in wood, of clearly identified copies of originals—and of fakes.

the old days," claims Charnchai Suparnichvoraphat, owner of Rat Buri's finest pottery factory, with a pride in the product echoed by virtually all of Thailand's serious duplicators.

Charnchai's operation spreads over a rustic, 11-acre compound, alive seven days a week with potters twirling wheels, painters calmly perched on stools before their works-in-progress, and keen-eyed employees touching up vases, water jars, and solemn figures that have been marshaled beneath mangoes and palms.

There is a continuous wrestling with clays, glazes and colors to match the subtleties and spirit of the styles copied. Charnchai's pieces are hand-thrown although he could employ molds, a technique that would speed up production 12 times its present bygone pace. Contemporary ceramics can also be decorated quickly and conveniently by modern processes. Hand-

*David Alexander is a veteran journalist, based in Bangkok, who covers events throughout Southeast Asia.*

Original pot decoration being copied here is itself a derivative of early Chinese Ch'ing Dynasty.

painting the traditional way, as practiced at Rat Buri, consumes a great deal more time. If the experimentation with clays and glazes is particularly complex, a piece can take a year or more to complete.

Charnchai and his co-workers delve into Chinese dynasties and Thai kingdoms to select samples for study, then reproduction. There are false starts and humdrum results, but experts say the finest may indeed rival the originals in craftsmanship. Dr. Piriya Krairiksh, a leading art historian and an adviser to museums in Thailand and Australia, recalls looking at a Bencharong bowl, a five-color style that is difficult to perfect, from Charnchai's workshop and thinking at first glance that it was simply a retouched original.

In Charnchai's father's day the factory did a low-volume trade. Business began to take off in the early 1970s when Thailand's "instants" industry as a whole was solidly rooted. Antiques were growing scarce but passion for them was as strong as ever. Foreigners had been the chief buyers, but now more Thais took an interest, further fueling demand. To those with a nose for profit and a taste for art, the way to go was obvious.

Workshops sprang up; existing handicraft establishments diversified, hiring talented artisans and apprenticing raw recruits. Charnchai's staff, for example, has more than doubled since 1975 to nearly 100 employees today.

"Some sell it as old, some as new," says Charnchai of his work. The big profits are reaped at the dealer level and most often in Bangkok, where fakes are funneled from provincial centers. Mrs. Chira Chongkol, director of the National Museum, estimates that three-quarters of the offerings at Bangkok's antiques emporiums are recent copies or heavily restored antiquities.

Aged by burning, new sections of woodwork have here been fitted into an old Burmese temple decoration.

"It's a great game," in some cases, says Dr. Piriya, "an ego trip to fool the great dealers of the world." Thomas Lawton, director of the Smithsonian's Freer Gallery of Art, says, "The uneasy relationship between the artisans who make reproductions and museum curators is one of long standing. The challenge presented to us by their objects keeps us on our toes."

But to the craftsmen at the grassroots, this end game is of little concern. The factories, engaged in perfectly legal activity, are not normally stealthy operations, although most don't exactly advertise, either—the retailers and middlemen prefer it that way.

Reception at a few of the workshops where faking is done can thus be decidedly cool. One keeps a particularly nasty guard dog on hand, while at another the owner declares a portion of his studio off-limits and winces when photography is mentioned, for reasons which are clear.

Some imitators, in addition to achieving similitude through fine craftsmanship, bring to bear an array of antiquing techniques: scorching, smudging, burial, exposure to the elements, application of chemicals, and artful disfigurement to mimic the toll of time and accident. Materials to be mastered include wood, bronze, stone, ivory and clay. And in addition to Thai styles, the imitators pluck the art histories of countries to which Thailand has cultural, historical and geographic links: Cambodia (Kampuchea), Burma, China.

At the base, it is a rice-bowl affair. There is money to be made in instants, and by people of humble backgrounds. Mrs. Banyen Aksornsee began pedaling a bicycle around the northern city of Chiang Mai selling wooden dolls and other knickknacks to tourists. Neither Mr. Ya nor Mr. Torn, probably the most talented sculptors of Cambodian antiques, finished high school. Ya (the man with the $15,000 head of Brahma) got into the business doing art framing for a pittance. Torn's father was a rice farmer. As a Buddhist novice, Inwan Chompeng used to decorate the village temple. He now earns a steady living at Mengrai Kilns in Chiang Mai, carving ancient designs into clay. Inwan's initials, he points out, are always etched on the base of each piece.

To be sure, artisans on salary—as opposed to workshop owners—don't get rich. But in a country where the average annual per capita income is about $750, the $6,000 or so a quality sculptor can earn per year is not bad going. A ceramics painter can rate between $3 and $10 a day, less than many skilled Western workers make an hour.

Unlike just about everything else, the instants industry is not centralized in Bangkok, a city of more than five million people. This is just as well, because provincial economies need a boost and there is no reason for urban centralization in the first place. Sophisticated technology is not required; the transport system to get the products to the Bangkok market is excellent, and there is plenty of talent in the countryside where the raw materials are found. Many of the provincial centers also have a far longer history and artistic tradition than Bangkok proper, which is a mere two centuries old.

*A rage for Bronze Age artifacts*

Take Ban Chiang in the impoverished northeast as an example, where Thai and American archaeologists in the 1970s unearthed an early Bronze Age site, along with pottery (300 B.C.-A.D. 200) of spiral, geometric and curvilinear designs painted red on a buff background (SMITHSONIAN, January 1983). These and other Ban Chiang artifacts became the rage, and locals did good business digging them up and selling them off to visitors. When originals grew scarce and sales were declared illegal, villagers turned both to reproductions and 2,000-year-old jigsaw puzzles: collecting shards from original kiln sites, piecing them together and using crushed shards in the mortar.

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The picturesque northern hill city of Chiang Mai is one of the country's main instants centers. While its artists and artisans have been hard at work since the city was founded in the late 13th century, the rise of tourism and the instants industry have given Chiang Mai's crafts a new life. The once-vast forests of teak and other hardwoods have been thinned out, but still provide sufficient materials for one of the city's specialties, wood carving. And the influence of nearby Burma continues to fertilize imaginations—after a fashion (chances are very good that a Buddha image billed as an antique right out of Mandalay has come straight out of a Chiang Mai workshop).

One foresighted local, Mrs. Banyen, entered the antiques market when upcountry abbots and villagers regarded old things much as Americans might a rusting automobile. Two decades ago, again with prescience, she started making reproductions, keeping the originals she collected as models and exhibiting them in a museum on a Chiang Mai property.The pert little peddler of tourist trinkets is today a very wealthy woman and visiting a Banyen compound is like entering a fairyland-in-wood: fierce-looking swordsmen, lithe celestial dancers and leonine creatures ready to pounce inhabit the green, shady courtyards. Geese are perched on walkways that in traditional style connect various sections of the complex, where *nagas* (serpents), *nats* (spirits), *garudas* (birds) and Buddhas wait in dusky rooms for buyers. There are an estimated 100,000 pieces, with stocks being continually replenished by

These expertly copied 19th-century Burmese celestial *nats* (white figures) await "antiquing" procedures.

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wood-carvers, a number of whom work expressly for Mrs. Banyen.

Chiang Mai's other prime old-crafts promoter is also a woman, a dynamic American entrepreneur who is widely credited with reviving the area's pottery tradition which, legend has it, began in the late 13th century when Thai royalty brought Chinese potters to their court.

Mrs. North, who pioneered the bottled-water industry in Thailand, got involved by chance. An old potter in Chiang Mai was on the verge of suicide over his inability to repay a loan. Mrs. North and a Thai partner took over his debts and his small kiln, and in 1959 ventured into the making of celadon, the high-fired stoneware covered with a translucent glaze. Her interest was not so much in copying old celadon ware but in rediscovering techniques that had been developed in China centuries earlier.

Mrs. North's Thai Celadon Company, which employs about 100 workers, imitates some old motifs, but its main lines are elegant dinnerware and lamps made from vases. Her success, however, set the wheels turning again in Chiang Mai, and some of her competitors began producing excellent replicas of Thai and Chinese wares. One of the best is Mengrai Kilns, run by Donald Gibson and a Thai partner. Gibson, an Englishman and former member of Her Majesty's diplomatic service, fell in love with Chiang Mai some years ago. His products have been paid the highest of compliments. Kiln mistress Duangkamol Srisukri says fakers will buy some of their best pieces, remove the bases (which carry the Mengrai logo and the craftsman's initials) and replace them with genuine ones from ancient kiln sites. The pieces may sometimes be scuffed up a bit or buried awhile for good measure.

"An American diplomat once told me it was shameful for us to make fakes and cheat people. But I tell you, I'm not ashamed in the least," says Prince Subhadradis Diskul, the dean of Thailand's art historians. "Tourists should be satisfied with good reproductions. Some are as good as the originals, and if they keep them long enough they'll become antiques."

He speaks with some bitterness, having witnessed an erosion of his country's artistic heritage. The prince believes that reproductions—and this is perhaps the least provable proposition of the defense—may keep the genuine treasures from being lopped off temples, pilfered and drained from Thailand and its neighbors. The reproductions may help sate the appetite for the old, at least among a certain class of consumers. What is galling to the Prince, at present the rector of Thailand's top fine arts university, is not so much the swindles in bogus art but this exodus into the collections of well-heeled Western art collectors.

And so one comes to the final argument of the defense, and for that it is best to visit the likes of Messrs. Ya and Torn, who prefer to be known by no other names. Torn and his assistants work under a thatch roof among banana and coconut groves near the ruins of Ayutthaya. There is no sign on the shop house that is Ya's studio and salesroom in Bangkok, and his name card simply reads "Ya's Mounting."

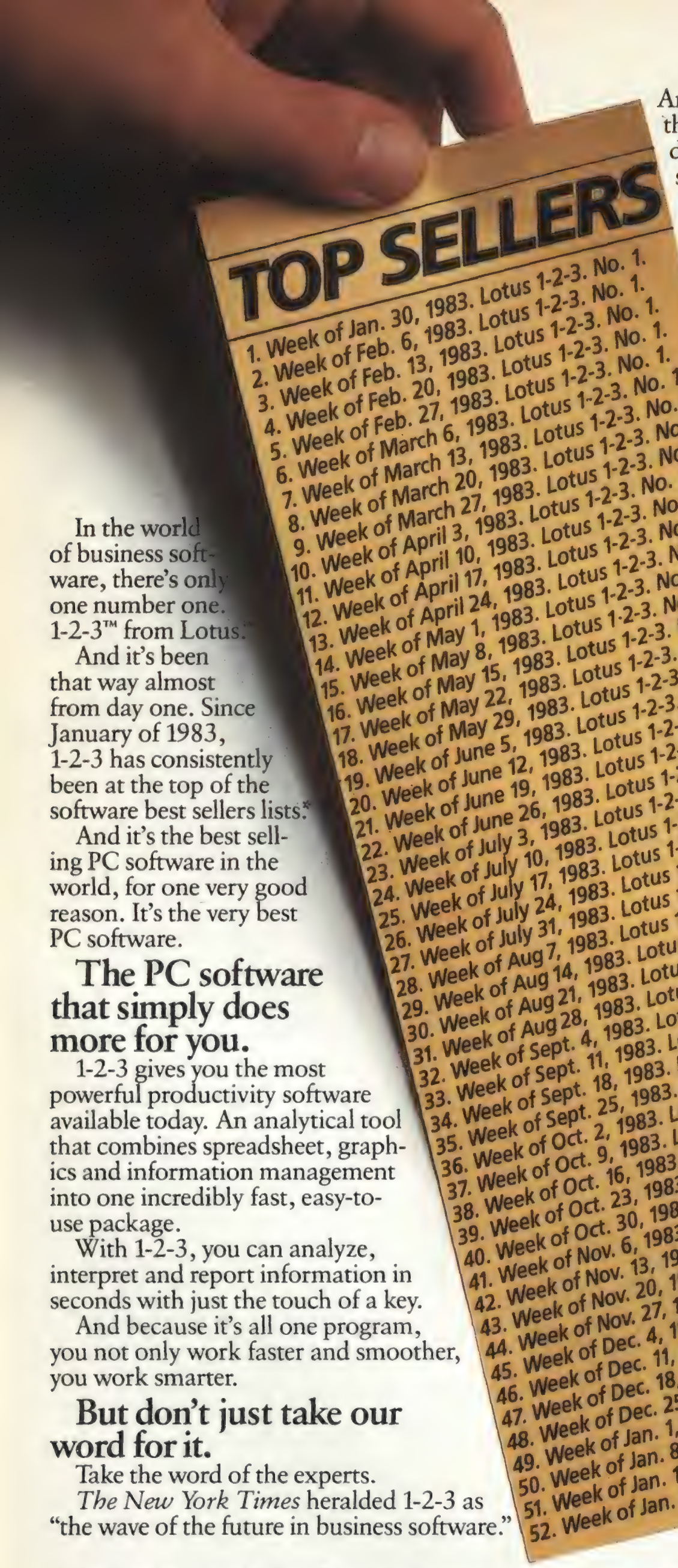
Both are regarded as extraordinary carvers, if not geniuses, working in that lucrative and refined corner of the instants world—stone sculpture, especially that of Cambodia's Angkorian era. This is fake art at its most intriguing. The material itself makes for most difficult authenticity checks, and much of the stone used is brought in from northwestern Cambodia or areas of Thailand once ruled by the ancient Cambodians. Some Cambodian reproductions made in Ayutthaya or Bangkok are even bundled off to the Thai-Cambodian border where they surface among refugees and are advertised as authentic pieces that have been smuggled in from the interior.

The masterful executions keep experts' heads shaking. Ya has said that at least one of his works is in a European museum. Prince Subhadradis is convinced he has seen Thai imitations in museums in Cologne, Geneva and possibly San Francisco.

It is this very reservoir of talent, having been drawn out through the challenge and profit of the instants, which some people like Piriya hope will be channeled into true creative efforts, perhaps into developing a unique contemporary style for Thailand.

"In the old days the court was the patron of the arts and crafts. Today, it's the tourist," Piriya says.

Among the fake Buddhas are two real antiques from 19th century. Can you spot them? (Answer on page 187.)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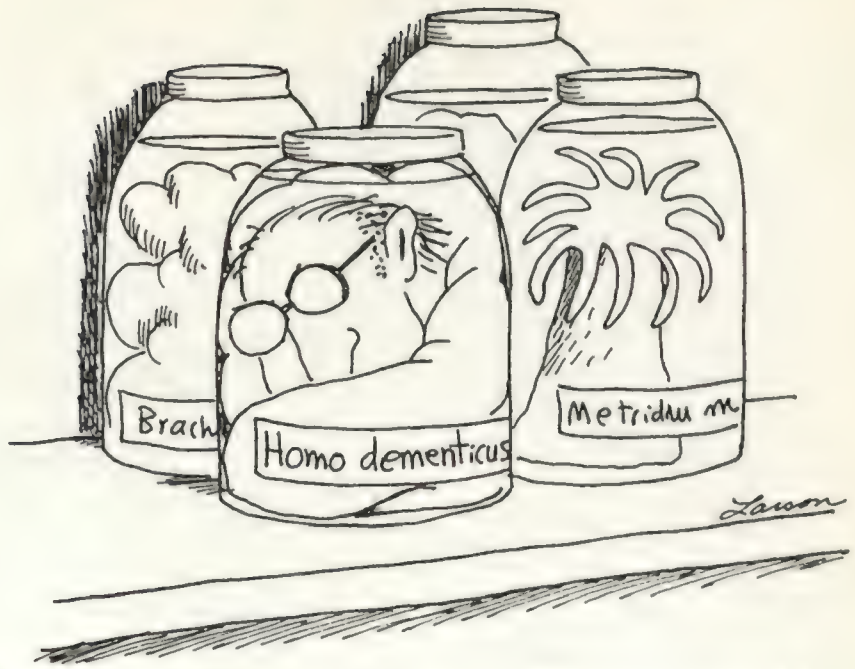
Cartoonist

*By Nancy Shute*

# Scientists meet their alter ego on the Far Side




New species recently discovered by Smithsonian staff has receding hairline—somewhat resembling Larson's.

*Gary Larson's offbeat cartoons have infested bulletin boards around the country; nowhere are they more epidemic than in research labs*

In the gloom of a rainy December afternoon, JoAnn Sanner hunches over a microscope in one of the many laboratories hidden behind the public corridors of the Smithsonian's National Museum of Natural History. A handsome woman in jeans, a blue zip-front sweatshirt and black wire-rimmed glasses, Sanner, a museum specialist in paleobiology, peers down at a tiny glass tray of what looks like two tablespoons of sand. Using a small fine-tipped artist's brush, she picks at the sand, sorting one grain from the next by some intricate logic. Interrupted, she looks up and answers my question. "Bryozoans," she says curtly, nodding toward the microfossils. "They're colonial animals."

But ask her about the dozen or so yellowing cartoons you've noticed curling on her bulletin board, and Sanner immediately loosens up. Reaching under the laboratory bench, she pulls out a neatly trimmed pack of cartoons, some photocopied, some clipped from newspapers. Flipping them across the bench like baseball cards, she gives a guided tour through her private collection with the authority of a true connoisseur. This serious woman of science not only cracks a smile—she can't stop laughing. "I like the natural history stuff," she chortles. "Like 'Great moments in evolution'—this frog fish; oh, you know, the one with the baseball bat; and, 'Sixty-five million years ago when cows ruled the earth'—I loved that. Here's 'Continental drift whiplash'." More giggles. "'Animals and their mating songs'—that is one of my *favorites*."

Spoofing one of his preposterous creations, Larson is right at home in cage at Seattle's Woodland Park Zoo.

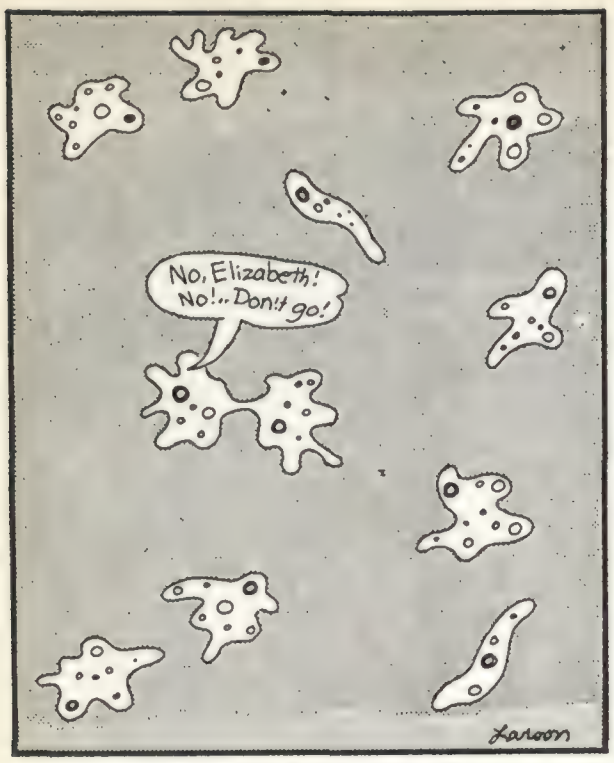
Sanner is not the only person who gets silly over the cartoons of a retiring Seattle artist. Since Chronicle Features first started syndicating "The Far Side" in 1980, Gary Larson's peculiar perception of what's funny has crept its way into 125 papers across the country and onto the *New York Times* best-seller list. The simple line drawings—doodles, almost—get his point across, hooking deeply into the psyches of the susceptible. The natural order of things goes seriously awry, with hilarious results.

On the far side, birds order a topping of gnats on their pizza; amoebas offer tender farewells at the moment of mitosis (p.114); a dog drives down the highway while its master hangs his head out the passenger window, tongue lolling in the breeze; bears peer at campers tucked into sleeping bags and exclaim "Sandwiches!" "The Far Side" is a world turned upside down, where the human species receives considerably less respect than it would like to think it deserves.

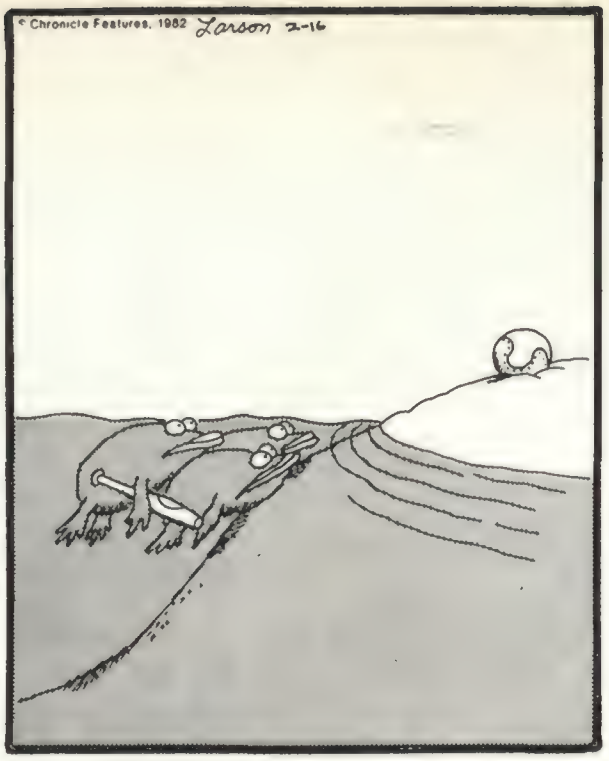
Of those people who read Larson's cartoon, a good number are more disturbed than pleased with his dog-eat-man view of *Homo sapiens*. Take the one where a couple scolds the witch they engaged to mind their children: "We hired you to babysit the kids, and you cooked and ate them BOTH?" That generated letters from outraged subscribers who did not consider it appropriate for a family newspaper.

But of those who delight in Larson's affliction, an astonishing number are scientists. In the sterile corridors of laboratories across the country, a growth of

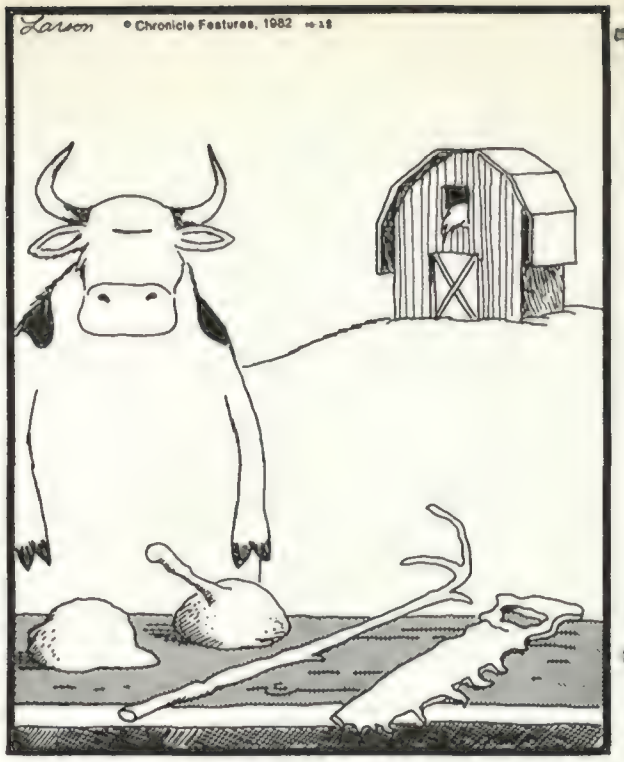
*Photographs by Dan Lamont*




*Life in the petri dish*




*Great moments in evolution*




*Cow tools*

"Far Side" cartoons flourishes. Single panels are taped behind Bunsen burners, to shelves full of chemicals, next to the electron microscope, by the rat chow. Physicists, anthropologists, botanists all seem to feel that Larson's queer visions are drawn especially for them, that this land of talking amoebas and frogs with bad table manners is somehow familiar terrain.

Most can recite their favorites from memory. The acknowledged paradigm: "Great moments in evolution." The panel features a trio of protomorphs hunkered in the primordial sea, staring forlornly at a baseball on the shore (above). One fish-creature carries a baseball bat under its pectoral fin. Other consistent winners include anthropological in-jokes, dinosaur jokes, and almost anything having to do with bugs.

In their fan letters to Larson, scientists often include abstracts of their research, suggestions on the fidelity of the drawings or their own crude sketches. Beleaguered high school teachers write that they use "Evolution of the Stickman" to liven up anthropology classes. Deborah Spies, acting director of the LSB Leakey Foundation, wrote: "Your clever renditions of early Man as well as primatology have been of tremendous interest; in fact, I've often clipped and sent specific cartoons to our scientists involved in such research."

The Smithsonian's National Zoo may have the strongest group of Larson admirers. "There aren't too many people here who aren't Gary Larson fans," says bird curator Gene Morton. "If you have any knowledge of animals, the cartoon is ridiculous to the point that you laugh uncontrollably. Frankly, I don't know how people who aren't biologists get it." Other scientists there are sure that Larson must be one of them.

*The author, a free-lance writer who lives in Washington, D.C., reads Larson's cartoon daily.*

Not quite, but they are close. Gary Larson is a frustrated armchair biologist, as envious of the talents of his professional admirers as they are of his. Always a good student, he took every college elective in science: ornithology, entomology, vertebrate zoology, invertebrate zoology, as well as anthropology and archaeology. But he ended up majoring in communications, a move he attributes to a fear of physics and a misguided notion that he was destined to save the world from mundane advertising. "I didn't want to teach, and I only wanted to go to school for four years," he says. "I would have liked to be an entomologist, but I don't know what I would have done with it."

His light brown hair beginning to retreat, at 33 Larson dresses in perpetual student garb: jeans, shirt and running shoes. The blue eyes are direct behind wire-rims, but the smile spreads hesitantly across his face as if uncertain about whether it's safe to come out in public. He looks like the kind of guy who belonged to the chess club in high school, the kind who played the banjo even though it wasn't cool, and who never asked any girl on a date because he took it as a given that no one would ever say yes.

His one-bedroom basement apartment, in a quiet middle-class neighborhood north of downtown Seattle, is furnished in modest Early Bachelor: stereo, TV, two guitars and a banjo hung carefully over the bookcase, kitchen exhibiting a suspicious air of disuse. There are, however, significant mutations from the norm. The shed skin of a 15-foot python loops its way across a wall and around the corner. A praying mantis inhabits a small cage on the bookcase. A Cape buffalo skull and a fossilized mastodon tooth (a present from his grandmother) are prominently displayed. A carnivorous Argentine horned frog lurks in its gravel-lined aquarium. Where there should be a sofa is instead a

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"snake Taj Mahal," a four-foot-high cabinet with five elegant snake condominiums, each backlit and nicely lined with clean wood chips. The residents—gray-banded Mexican king snakes, triangulated king snakes, a Florida king, a corn snake and a black pine snake—occasionally pop their heads up from the cubbyholes and flick slender black tongues at the humans on the other side of the glass. Larson gestures toward them, deadpan. "They do great things for your social life."

Gary grew up in Tacoma, a typical boy except perhaps for his skewed view of the animal world. His favorites were tarantulas and ants: "I'd throw red ants in with black ants," he says, "and then play war correspondent."

Doris Larson remembers her youngest as a nice boy who divided his time between drawing animals and collecting them. "He drew dinosaurs and gorillas—*very* excellent gorillas." One dinosaur was permanently outlined on the dining-room table, Gary drew so hard. The family menagerie, Mrs. Larson recalls, included, at one time or another, snakes, iguanas, pigeons, a monitor lizard, a small alligator, tarantulas, a praying mantis and a constantly rotating stock of frogs and salamanders. "A garter snake almost disappeared into the davenport one time," she says, laughing. "I caught it just as it was vanishing into the cushions. And another time a boa constrictor got wrapped in my sewing machine."

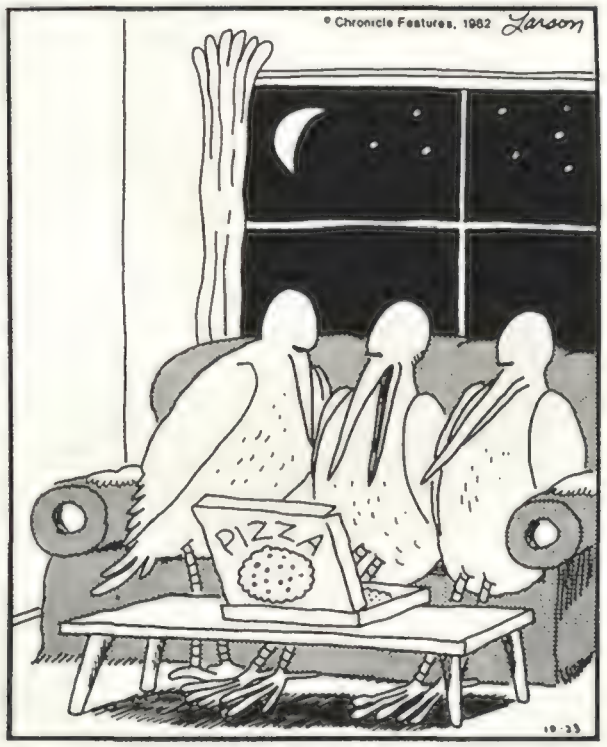
After graduating from Washington State University in 1972, Larson played jazz guitar and banjo in a local group before signing on as an animal-cruelty investigator with the Seattle Humane Society, where he witnessed the worst behavior of both humans and animals. This stint provided the twist of fate that led to Larson's establishment as a cartoonist. On one of his animal-rescue missions, he met a *Seattle Times* reporter. She saw cartoons that he'd been doing in his spare time and suggested he sell them to the newspaper. The *Times* shortly thereafter signed on Larson to do a weekly cartoon, "Nature's Way," which was killed a year later after complaints about the unnatural selection of the subject matter. A few months later, he walked his cartoons into the offices of the *San Francisco Chronicle*, and walked out carrying a five-year contract with the *Chronicle* syndicate. The ease of it all makes him nervous, as does the fact that he now earns enough money to hire a lawyer, buy a Betamax and move into better digs.

Larson works quietly at home, staring for hours at a drawing board wedged in a corner of his bedroom between the copier machine, the stuffed warthog head and the framed shark jaw. He draws the cartoons on illustration board first with pencil, then with technical pens, a process fueled by numerous mugs of coffee and an occasional Dan Hicks record.

He says the ideas flow out of some part of his subconscious that he'd really rather not probe too deeply. Psychoanalysis, he figures, might smooth out that creative warp. "I don't set out to make a statement. My goal is to make it humorous and entertaining."

How does science fit into Larson's comic theory of evolution? "I think scientists feel the same awe at a field of flowers as anyone else, but they also ask questions," Larson hypothesizes. "They don't let the mys-

*"Hey! What's this Drosophila melanogaster doing in my soup?"*




*"Let's see—Mosquitoes, gnats, flies, ants . . . Those jerks! We didn't order stink bugs on this!"*

*"What a day! . . . I must have spread malaria across half the country."*

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*"Well, look who's here . . . God's gift to warthogs."*

tery of life go on just as that. That's their genius." At their best, Larson's cartoons display the same creative curiosity that a scientist uses during long hours in the lab. Commonplaces are twisted, tilted on their side, tweaked and shaken. Nothing is assumed, nothing left unquestioned. When the process works, the familiar is revealed in unfamiliar ways: a discovery.

Sometimes the scientific method of cartooning backfires. Perhaps the best example is "Cow Tools" (p.114), a 1982 Larson cartoon that showed nothing more than a Holstein standing behind a table of crudely fashioned hand tools. The day it ran, newspapers and radio stations around the country were inundated by calls. The following day, the *Spokane Spokesman-Review* ran the cartoon on the front page with a caption: "What does it mean?" Larson was besieged by talk-show hosts and bewildered fans seeking an explanation. More than a year later, Larson the perfectionist is still mortified by the whole flap.

"I was thinking back to an old anthro class," he explains, "where the professor said that the definition of Man was that he used tools." Larson had a hard time believing that the rocks the professor brandished were actually early tools. "They looked like rocks to me. I started thinking, what if cows were discovered as toolmakers. What would the tools be like? What if some paleontologist dug them up? So I drew a cow standing behind a workbench displaying these meaningless, horrible things."

If there is a deformative influence in Gary Larson's life, it may well be his friend Ernie Wagner, reptile curator at Seattle's Woodland Park Zoo. Larson is too gracious to suggest that I not meet Ernie, but he makes a point of going along, visibly nervous about what his friend might say.

Sitting on the sofa on a dark and rainy Sunday afternoon, Ernie looks harmless enough. His brown hair still flops over his ears, and the flannel shirt, wire-rims and cartoon T-shirt of a cat stir-frying mice lend a 1970s air—a darker version of John Denver. Wagner is 45, but looks 35. Stacked around him are postcard-size swatches of cloth that he is stitching together to make snake sacks. Snake sacks? "When you ship snakes," he explains, "you're required to put them inside a bag inside a box. So I spend my winters buying old sheets at garage sales and making snake sacks."

Wagner, it turns out, needs a lot of snake sacks. Over the years he has developed his own snake business, breeding rare and exotic color phases of king snakes, boas and pythons through manipulation of climatic cycles of heat and light. The offspring sell for as much as $300 apiece to snake fanciers around the country.

Larson met Wagner years ago when he called the zoo with some reptile question that neither of them can remember. Since then, Larson has accompanied the herpetologist on two snake-hunting trips to remote provinces of Mexico.

*Dubious teamwork on a herpetology hunt*

"Gary helped rediscover a lost species," Wagner says proudly. The tedious job of hunting snakes in the wild—long hours of searching crevices along canyon rims with mirrors and turning over rocks—was enlivened by zoology trivia quizzes: What are the four tooth structures of a snake? What are the gill arches of a fish called? On their 1980 trip they unearthed several Ruthven's king snakes. This snake had been discounted as a species because it had not been spotted since the 1920s, but it has been formally reinstated as a result of Wagner's and Larson's discovery.

"My contribution is minimal," Larson says modestly. "Gary carried the money," Ernie counters; "you don't think I'd carry money in the mountains of Mexico, do you?" Wagner then launches into an intricate monologue on the unseasonably cold weather they faced in San Luis Potosí when Larson interrupts: "The story is he stole my long johns." "Gary's always losing things," Wagner retorts, grinning. "He's always taking advantage of me," mutters Gary.

Ernie Wagner takes malevolent glee in recounting

the practical jokes he's played on Gary over the years. Like the time he taped a fringe of mouse tails—snipped from frozen snake food—across the back window of Larson's car. Larson, who was working at the Humane Society, drove around all day before he realized the fringe over the window was not shag carpeting.

Larson is not always victim in this battle for survival of the wittiest. Disturbed that Ernie's pranks were escalating to a dangerous degree, Larson gathered together other victim-friends in a pact to booby-trap Wagner's house. The 50 pounds of hippopotamus manure in the bathtub was one of the milder forms of retaliation. Since then, Larson notes, Wagner's penchant for the perverse has waned considerably.

However, the nonsibling rivalry continues. "Science? Gary uses *science* in his cartoons?" Wagner snorts. He brings up the cartoon featuring a polar bear at the North Pole wearing a tiny penguin mask (there are no penguins at the North Pole), and the panel showing a tired male mosquito walking in the front door after spreading malaria across half the country (only female mosquitoes bite). "Oh, well," Gary says sheepishly.

But their friendship endures. As a gift for Wagner, Larson drew an entire volume of snake cartoons that play off the legless creature's odd lot in life in a deliriously lewd way. One of the few recountable scenes depicts a male snake leading a female snake into a room equipped with an absurdly long narrow bed. She sees it and says, "So *this* is what you had in mind."

Whether at play or at work, Gary Larson's deep affinity for scientists is apparent; they are, he says, "just people I relate to more." One day, he and I drive over to the labs at the University of Washington's School of Public Health, where we find Dan Luchtel, a professor of environmental health, putting a transmission electron microscope through its paces.

Peering into the round green screen that glows in the darkened room, Luchtel zooms in on the nucleoli of salivary gland cells. At a 17,000x magnification, they look as large and comprehensible as Ping-Pong balls—mysteries of the infinitesimal revealed. "You can describe all of the universe in 42 orders of magnitude," Luchtel explains, twiddling dials. "From the universe itself down to subatomic particles."

"Gee," comes the response from the far side. "You'd be good at Etch-a-Sketch."

Upwardly mobile Larson just moved from basement apartment to a two-story house, but he still hangs out with the same old friends, like the warthog head above him and papier-mâché dragon on the snake condo.

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## Audi: the art of engineering.

Figurehead is part of a collection of folk art housed in Fenimore House, built by Edward S. Clark.

Sterling built a strong collection of 19th-century French art, including Renoir's *Onions*, right.

*By Robert Wernick*

# The Clark brothers sewed up a most eclectic collection

*Four heirs to the Singer sewing-machine fortune left a museum legacy devoted to everything from Impressionist art to the national pastime*

"The End of an Era," said the local newspaper, and the thousands of bidders and bystanders flocking through the auctioneer's striped tent on the grounds of Iroquois Mansion were well aware of it. This is what had brought them all the way to Cooperstown on its quiet lake in the middle of New York State. The white-gloved men from Christie's bringing out the objects to be sold were also trundling cartloads of nostalgia. There was nothing very unusual about the objects; they were miscellaneous bric-a-brac, the leftovers after the more valuable possessions had been disposed of in London and New York. There was English furniture, Colonial furniture, pots and pans. There were cast-iron Franklin stoves from the 1820s; mint-julep cups by Kentucky silversmiths; about a hundred sporting prints. There was a bronze statue of Kellsboro' Jack, the bay gelding which in 1933 won the British Grand National for Frederick Ambrose Clark (p.126), owner of Iroquois Mansion.

It was this F. Ambrose—Uncle Brose to his family and to the sportswriters who loved to chronicle his deeds—to whom these crowds, dishing out a totally

*Sandlot Kid* at Doubleday Field, Cooperstown—Clark summer place, home of baseball's Hall of Fame.

unexpected sum of $865,000, had come to pay homage, and through him to acquire a sense—or a piece—of a vanished way of life. Uncle Brose was a last survivor of the golden age of American millionaires, one of those jaunty self-assured men who ruled their roosts with style.

He was the third of four brothers, grandsons and heirs of a man named Edward Clark. Clark had graduated from Williams College in 1831 and then studied law in the office of Ambrose Jordan in Hudson, New York. He was shrewd and diligent, and in a few years he was both Jordan's son-in-law and his partner. The firm prospered and moved to New York City. There, subsequently, Clark found a client in his office, one Isaac Singer, also from upper New York State, a wandering Shakespearean actor who considered himself one of the best Richard IIIs of the day. But there was little money to be gained in tragedy, and Singer had turned his hand to puttering with inventions. He had patented a type-carving machine in 1839, but it was unsuccessful. He then went to work on an improved version of the sewing machines which had been patented by Elias Howe and others a few years before. Singer's was the first truly practical model on the market, but it would obviously require all the business acumen and legal craft of a man like Clark to get it financed, into production and safely through the patent-infringement court cases. Singer could hardly afford to pay for these. He was living with three different women in three different homes at the time, and found it hard to support them and the 14 children they had borne him, not to speak of his legal wife and two legitimate children. Clark agreed to take on Singer's affairs for 50 percent of what was to become the Singer Manufacturing Company.

Edward Clark came to loathe Singer, whom Mrs. Clark described as a "nasty brute," and Singer in turn despised Clark, "the most contemptible-looking object I ever saw with his wig off." Nevertheless, they were able to mesh their talents perfectly and make the sewing machine an international institution, one of the first of the mass-produced articles that revolutionized home life throughout the world. There were other sewing machines on the market, but the Singer

Founding father of family fortune was Edward, an entrepreneur who got in early on the Singer Company.

Company had such unusual marketing and financial skills that by 1870 it dominated the field.

Singer left substantial fortunes to 20 of the 21 surviving sons and daughters he recognized, the best known of whom was Paris Singer, father of Isadora Duncan's son Patrick. Correspondingly greater fortunes went to Edward Clark's four grandsons, who were to enter turn-of-the-century high society with ease. They were of contrasting physiques and temperaments: Brose was hale and hearty, Stephen somber and contemplative, Edward Severin sickly, Robert Sterling bluff and gruff and military.

Brose's legacy was the stuff of pure folklore. With his gaiters and gray bowler and his ruddy face, he might have stepped out of one of his own hunting prints as he daringly rode or drove his four-in-hand down the lanes of Saratoga, Westbury or wherever horsemen gathered. Between the horses and high living he had, or so they said, broken almost every bone in his body by the time he was 70, and when he broke his left hip in what turned out to be his last fall, he would not get into the ambulance until they had brought him a bottle of champagne and a Havana cigar. Even in his 80s he rode a pony every day. In Cooperstown where he made his home, you cannot to this day walk into a bar without running into someone who had served "Uncle Brose." His spirit, they say, watches over the place still, for at his request he was buried between Kellsboro' Jack and his favorite dog on a hill overlooking the town.

The Clarks have contributed enormously to Cooperstown. They built the hospital, library and gymnasium, and owned a weekly newspaper there. The Clark Foundation provides scholarship funds for as many as 700 local youngsters for higher education. At one end of Lake Otsego they built, and still own, the imposing Otesaga Hotel; when its front porch was put up in 1909, the wooden columns were said to be the tallest ever seen in America.

Edward Severin, the oldest of the brothers, was known in Cooperstown as the Squire. In his youth he had inherited the Dakota apartments, that great stone fortress built by his grandfather on Central Park West in New York City, which set the standard for luxury-apartment living in the big city, with its 20-foot ceilings, huge closets and baronially dimensioned rooms. His first love, however, remained Cooperstown; there he raised a famous herd of prize Guernseys and there, a few years before he died, he built a vast and stately home which he called Fenimore House. Some years after his death in 1933, his brother Stephen arranged to have Fenimore House given to the New York State Historical Association.

Stephen was the Clark who felt the most responsibility for looking after the interests of Cooperstown. He was concerned that it might sicken and die; a blight had infected the hop fields which were important to the rural economy. He felt that the only way the town could survive was through the promotion of tourism, and he took the lead in supplementing its bucolic quaintness with a nexus of museums, which have, in fact, brought thousands of visitors steadily into Cooperstown.

At Fenimore House, the Historical Association has put on display its distinguished collection of Early American arts and artifacts: furniture, cutlery, weathervanes, cigar-store Indians, genre paintings of 19th-century life, folk art all the way from the itinerant Colonial portraitists to Grandma Moses.

The massive stone barn where Edward Severin Clark kept his cows has been turned into the nucleus of the sprawling Farmers' Museum, which aims, in a style currently fashionable in the museum world, to bring the visitor into touch with the realities of workaday life among the ordinary people, the noncelebrities, of the past. The barn is flanked by old stone and

*The author's article on Atlanta's High Museum appeared in the January issue. He wrote about pepper, its prevalence and its history, in February.*

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Brother Frederick Ambrose, an internationally known horseman, is shown here with one of his beloved dogs.

wooden buildings, which have been picked up and moved from farms and villages within a 50-mile radius of Cooperstown, typical structures of the days when upper New York State was still frontier country. There is a church, schoolhouse, general store, druggist's shop, printing shop, doctor's office, lawyer's office, tavern. In these surroundings, authentic blacksmiths, broom makers, spinners and weavers exercise their crafts. Women in long gowns perform such obsolete tasks as braking and hatcheling (combing) flax, acting out the standard duties and drudgeries that filled the rural day before electricity and the mail-order catalog came to bring a measure of freedom.

One day in the mid-1930s, a persuasive neighbor talked Stephen Clark into buying, for $5, a ratty-looking clump of twine bound up in cracked hide, which the friend assured him was the very ball used by young Army cadet, later Major General, Abner Doubleday, who was said to have invented the game of baseball. The new owner had little interest in the sport, but he had his grandfather's eye for potential value lurking behind scruffy exteriors. Out of that sorry ball has grown the massive National Baseball Hall of Fame and Museum (p.129), inaugurated in 1939 and almost immediately established as the Jerusalem of the national pastime, to which pilgrims come on the order of 200,000 a year.

*A keen eye and a haughty air*

Stephen Clark was, as well, a knowledgeable and enthusiastic art collector whose acquisitions ranged eclectically from Old Masters like El Greco to modern European art. He was, for example, an early admirer and purchaser of Matisse. For seven years he was chairman of the board of the Museum of Modern Art in New York (p.128), years of tremendous expansion in its size and influence. His haughty ways did little to endear him to the staff, but MOMA confidently expected that at least it would inherit his magnificent collection of pictures. But he sold off his Matisses before he died and left the bulk of his paintings to other institutions—the Eakinses to Yale and the El Greco and Cézannes to the Metropolitan in New York.

The remaining brother, Robert Sterling, shared Stephen's passion for the arts and Ambrose's for horses; he also had a pronounced taste for good bourbon and an eye for beautiful women. He was a tall, bluff military man who had served in the U.S. Army fighting the Moros in the Philippines and the Boxers in China. He had led a scientific-exploration expedition into the deserts of northern China and co-authored a book about it. He bred and raised thoroughbreds on a Virginia farm in accordance with experimental principles of his own devising. He loved

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Paris above all other cities, and there he met and married a handsome, sprightly Frenchwoman named Francine. His brothers were said to have disapproved.

Sterling was an enthusiast for French cooking and spent hours whisking up sauces in the kitchen. His honest meat-and-potatoes neighbors could only peck nervously at his dishes, wondering what horrors in the way of frogs, snails or unmentionable organs might be hidden in those sauces. An opinionated man, Sterling went on cooking as he pleased—and he never let his brothers interfere with his life-long devotion to Francine (p.130). He valued her taste, and she quietly collaborated with him on what became the consuming interest of his life: building up the collection of rare and beautiful works that was to be part of the Clark family's finest legacy, the Sterling and Francine Clark Art Institute.

He began collecting in 1912 and the following year made a trip to Europe, with his younger (but more knowledgeable) brother Stephen and George Grey Barnard, the sculptor, along to give advice. But he was never a man for advice, and from the start made it clear that he was not an ordinary young dilettante out to scoop up the treasures of the past. His eye from the start was eclectic and idiosyncratic. One of his first purchases was a Piero della Francesca, who at that time was relatively unknown; it was only later that critical opinion made him one of the supreme figures in the history of art.

Ballroom of Fenimore House in Cooperstown displays exhibition of James Fenimore Cooper's America.

Sterling Clark never gave a fig for critical opinion. He thought critics were bores who were always counseling him against buying paintings because they were of a bad school or a bad period, whereas he was only interested in individual works that were well painted and celebrated his own zest for life.

He became a familiar figure on the premises of dealers like Knoedler and Durand-Ruel, listening to shoptalk, waving his cane like a saber at pictures he liked (the staffs were always alarmed that he would one day poke a hole in one of the canvases). In 1916 he acquired his first Renoir—there were to be 36 of them in his various homes—and this was the nucleus of one of the finest small, private collections of late-19th-century French paintings in existence.

One of his Monets must have had a special charm for him. He bought from Durand-Ruel in 1933 a vibrant view of tulip fields near Haarlem in Holland. There was another view of these same fields by the same artist in another fine collection in Paris, that of the Princesse de Polignac, the den mother of the French intelligentsia, the great friend of Marcel Proust. She had been born Winnaretta Singer, one of the last brood (in wedlock this time) of Isaac Singer.

There was nothing unusual about buying Impressionists in the '20s and '30s; everyone who could afford to was collecting Sisley, Pissarro, Degas. What set Sterling Clark apart from the others was that he was also buying the works of the academic salon painters, the official artists of their time, against whom the Impressionists rebelled. The works of these men were characterized by realistic drawing, high surface polish and anecdotal subject matter, qualities that fell out of fashion in Clark's day.

At the Museum of Modern Art, Stephen Clark, right, was board chairman, Nelson Rockefeller president.

Baseball Hall of Fame shows Giants' John McGraw in typical pose, center; Christy Matthewson is at left.

One day during World War II, Durand-Ruel learned that there was a large painting, some 9 by 6 feet, lying forgotten in a New York warehouse. Since it was in a slotted crate, they were able to peek in—and recognized it at once. It portrayed four naked nymphs frisking around a muscular satyr (p.131). It was the work of Bouguereau, one of the most honored artists of his day. At the turn of the century it had hung in the saloon of New York's Hoffman House to be admired by young bloods like Sterling Clark. Bouguereau in the 1940s was all but forgotten, and Durand-Ruel had no trouble picking up the painting for the cost of the unpaid storage bills. When they put it on exhibition for the benefit of French war relief, it was a tremendous success. Clark bought the painting for $12,000, never doubting, though he didn't live to see the day, that fashion would swing around again, and people tired of the stark fanaticisms of modern art would turn back with pleasure to the opulent extravagances of Bouguereau and his ilk. And to the post-modern eyes that are beginning to blink in the art world these days, the sparkling liveliness of Boldini's fish market on the beach of Etretat can be just as stimulating as Monet's study of the flash and ripple of sunlight on the same beach, which hangs near it on the walls of the Clark Institute.

Sterling Clark had once proposed to his brother Stephen that they jointly leave their collections to a museum they would set up in Cooperstown, but bad blood between them was to put an end to that idea. Later he thought of offering his collection as the nucleus of a museum in New York City, similar to the Frick. He was distressed, however, by the modern tendency to drop bombs on big cities. At length he found a safer refuge for his beloved works of art in bucolic Williamstown, Massachusetts.

The Clarks visited there in the early 1950s and began to create what was to become the Clark Art Institute, perhaps the most pleasant small art museum in the country. Sterling himself superintended the construction and dictated much of the design of the building that was to house his treasures. He wanted a Greek temple of white marble, and that is what he got—a chaste, gracious little temple fitting perfectly into the green Berkshire hills. It fits in so well that when, years later, a new building had to be put up alongside for the library and administrative services and additional exhibition space, the new structure—blockhouse modern at its most ungainly—was taken under the wing of the old, and somehow the incongruous pair sit side by side in harmony.

The interior rooms, light and airy, with wide windows opening on the outside green, look like enlarged rooms of a private house, and in a sense they are, for the Clarks kept a small apartment within the museum while it was being built and stayed on until Clark's death in 1956. Few of the works on its walls had been bought with a view to public display. They had been meant for the various Clark homes, in Paris or Virginia or Cooperstown, or the apartment on Park Avenue. They were bought because Sterling (with Francine's quiet advice and consent) liked to have them around.

The Cardiff Giant, a hoax of the late 1860s, is now at Clark-funded Farmers' Museum in Cooperstown.

Intimate portrait of Sterling Clark and wife, Francine, shows them at art dealer Durand-Ruel's in New York.

Sometimes, in his racy letters in English and French, he documented the reasons for his attraction to particular works. There is a remarkable Remington of horses being led off while dismounted cavalrymen fire at unseen Indians. Clark admired it for the way the horses, brilliantly foreshortened, seem to be galloping straight out of the canvas, and for the leathery mustachioed faces of the riders, which epitomized the old Army he had served in and loved.

One of his favorite paintings was Renoir's *Onions*, a paean to the eternal vigor of vegetable life (pp.122-123). He enjoyed telling of how he hung this painting on his dining-room wall when the man from Knoedler's came to dinner. The visitor could hardly take his eyes off those six pink, lavender and ivory tubers—with their two attendant heads of garlic, all with stems waving like pennants over a battlefield—even when he had to turn his attention to the splendid repast cooked by Clark himself (perhaps with the brown sauce on the guinea hen saved from over-acidity at the last minute by a judicious admixture of Grand Marnier).

Visitors to the Clark Institute can often be seen smiling, not the most usual sight in museum halls. They are responding to the collector's own warm pleasure in the good things of life: the bold intricacies of 18th-century English silver, the exotic color harmonies of mock-Oriental scenes like Gérôme's *The Slave Market*, Degas' racehorses pawing the ground, lavish interiors, richly rolling landscapes. Clark had no taste for the tragic or problematic in art, or anything he regarded as merely experimental. He had no use for Picasso or Matisse, and he could never understand why one of his favorite dealers, Knoedler, would waste his time trying to get him interested in Milton Avery (SMITHSONIAN, October 1982). His spiritual home was late-19th-century France, land of solid comfort and brilliant color. He loved its women—Renoir's pink-cheeked shopgirls, Degas' coltish dancers, Alfred Stevens' introspective society ladies—though it must be added that he was catholic in his taste for handsome women and responded equally to an ethereal actress by Gainsborough and a healthy outdoor girl by Winslow Homer.

Sterling Clark was an old man when work began on his Institute in Williamstown, and he was infirm by the time it was inaugurated in 1955. He died only a year and a half later. Francine served as president of the Institute until her own death in 1960. Both Clarks were buried under the building's marble steps.

The last years of the dashing old Army officer were not at all melancholy. Not only did he have the satisfaction of outstripping his bright brother Stephen, who may have collected more valuable paintings but never had a museum named after him, but he outdid his brother Brose on *his* own turf as well. In the year before the Institute was dedicated, Sterling's colt Never Say Die won the Derby at Epsom Downs, the first time in the 174-year history of the race that an American-owned-and-bred horse had done so.

Never Say Die went on to win the St. Leger and was expected to win England's Champion Stakes as well. But, according to Humphrey Finney's memoirs (he looked after Clark's racing interests), that would have put him ahead of the Queen in victories for the year. So as a last sporting gesture, Clark retired Never Say Die from racing and presented him to the British National Stud to achieve immortality as the sire of future champions. He also was put on the bookplate that Sterling designed for his rare volumes: the stallion's noble head surrounded by an interlocking pattern of fleurs-de-lis (in honor of Francine's native land) and sewing machines (as a reminder of where it had all come from).

Sterling Clark got overwhelming Bouguereau, *Nymphs and Satyr*, for peanuts when academic style was out.

# The boys try a new place in their Peugeot

They have driven almost two hours to get to this place, a lake with an old Indian name that means "Fish jump out."

It was still dark when the man woke the boy and they both tiptoed around the house, the floorboards cold under their feet, getting ready. Getting ready consisted of climbing into some clothes and taking the sandwiches out of the refrigerator. The man did not make the boy wash his face or brush his teeth, which made the day seem even more special.

They do not bring the boy's sister this time. She is only four and makes a lot of noise and thinks fish stink. It is just the two of them, the big one and the little one. "The boys," as the mother calls them.

"Do you think it's true?" the boy asks.

"Is what true?"

"Fish jump out."

The man nods. "You'll see."

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PEUGEOT

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*By Sylvia Duran Sharnoff*

# Lowly lichens offer beauty—and food, drugs and perfume

*A mysterious relationship between fungi and algae creates symbiotic organisms that can live almost anywhere the air is clean*

Lichens can be spectacular for anyone who cares to look, but few people take the trouble. Often more modestly colored than those pictured here, and seemingly two-dimensional as they cling to whatever surface they find, they grow in the background—as though designed to be ignored. Yet they hold a special fascination for botanists, partly because they present mysteries still to be solved and partly because they do so many things so well.

These symbiotic organisms make soil where there is none, and enrich it where there is. They come in many forms and many compositions, and throughout history people have turned to them for medicines, dyes and perfumes—and poisons. Caribou and reindeer eat them, and so do people; a Near Eastern lichen may have been the Biblical "manna from heaven." And they add beauty to the scenery, whether deep woods or rocky hill.

"We are more indebted to the humble lichens for the charming romance of our sylvan scenery than we imagine; for we are apt to overlook the minute plants by which much of the effect is produced," wrote the 19th-century botanist Hugh MacMillan. And he quoted approvingly an account of their application in the rural Sweden of his day: "The forest, which is the

Orange *Caloplaca* and yellow *Acarospora*, shown here four times life size, follow cracks in a slate outcrop.

*Photographs by Sylvia Duran Sharnoff and Stephen Sharnoff*

countryman's workshop, is his store-house too. With the various lichens that grow upon the trees and rocks, he cures the diseases with which he is sometimes afflicted, dyes the articles of clothing which he wears, and poisons the noxious and dangerous animals which annoy him."

No casual observer of a lichen would ever suspect that it was a composite of interacting life forms. In fact, when Simon Schwendener proposed this startling idea in 1867, a leading lichenologist ridiculed it as "merely the most recent instance of German transcendentalism applied to lichens."

The seemingly uncomplicated lichen is actually composed of a fungus and a colony of algae (or blue-green algae, which some scientists now consider to be bacteria). A few species even include all three of these diverse forms of life. A complete lichen is strikingly different from its separated partners in both appearance and biochemistry; many produce unique compounds which cannot be made by the component organisms alone.

The fungus is always dependent on the algae's photosynthesis for food, but so far, scientists can only make guesses to explain how the fungus induces the algae to release so much carbohydrate. Schwendener thought of the fungus as a parasitic master of captured algal slaves which it surrounded "as a spider its prey, with a fibrous net of narrow meshes." Sharing his keen interest in fungi and lichens was Beatrix Potter, author of *The Tale of Peter Rabbit*. She was among the earliest supporters of Schwendener's unpopular hypothesis, although she argued that the fungus was a contributing partner—storing water and providing

*Sylvia Duran Sharnoff has been photographing lichens for 11 years. An exhibit of the Sharnoffs' pictures is touring museums across the country.*

Bright green lobes of a lichen are both algae and fungus, the latter producing the dark fruiting bodies.

Pale green lichen, with fungal fruiting bodies, grows over a moss, a plant it is sometimes confused with.

*Lecidea* spreads over rock surface in Carson Pass, California. The dark "collar" is fungus expanding.

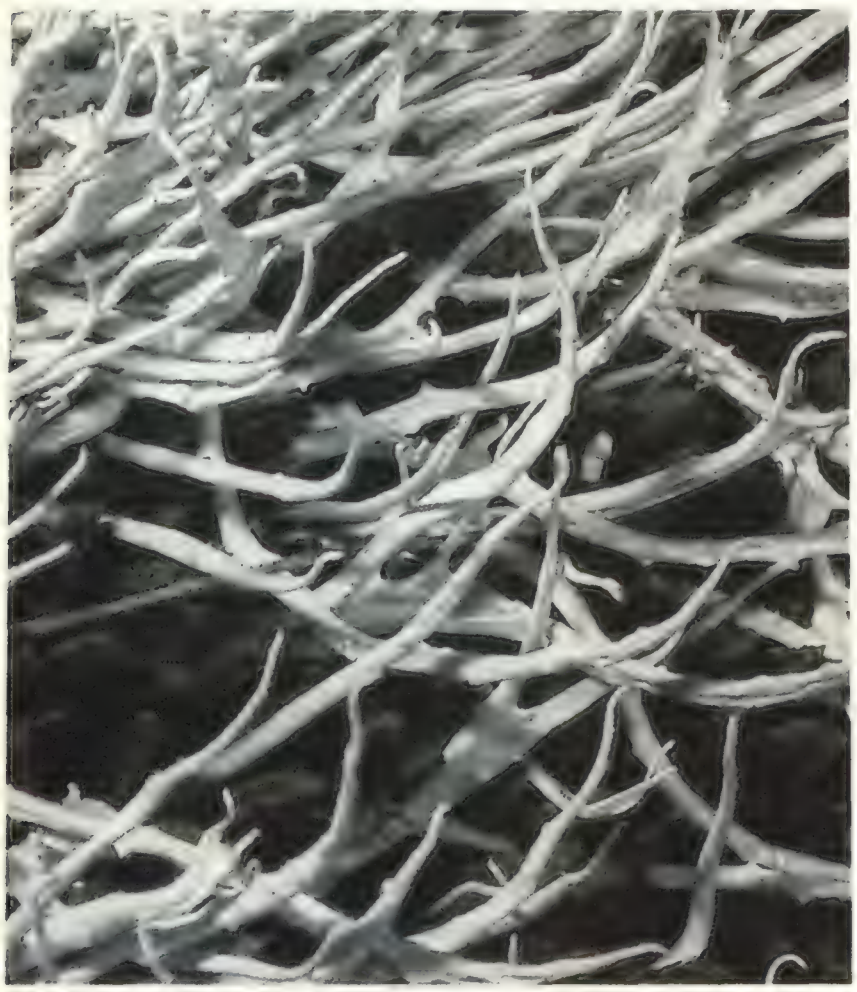
mineral nutrients for the algae in a mutually beneficial symbiosis—rather than a parasite. This appealing point of view, which held favor for years, was based only on speculation and is still not supported by actual evidence. Lichens have long been recognized as dual organisms, but the controversy over the nature of the symbiosis involved, with its overtones of human moral values, is still not entirely resolved. Recent research indicates that on the cellular level, the fungus is indeed parasitic on the algae. But this view is too narrow to encompass the remarkable structure and unique biochemistry of the organism as a whole.

Lichens are not moss, but many of their common names—oakmoss, Iceland moss, reindeer moss—reflect the early days of botany when they were classified with mosses. They tend to share mosses' habitats, growing on trees and rocks and in such places as the damp soil of shaded road cuts. But they also grow in places where mosses cannot. They grow in almost every natural habitat imaginable, from deserts to tropical rain forests—even on the backs of certain beetles in New Guinea, and inside rocks (along with algae) in the otherwise barren dry valleys of Antarctica.

Many species can tolerate extreme heat, cold or dryness. Very few, however, can withstand severe air pollution, and many survive only where the air is very clean. The disappearance of lichens from an area gives warning of a threatened environment.

Because lichens are so sensitive to air pollution, they are used as environmental monitors. In 1971, 15,000 British schoolchildren took part in a lichen survey which resulted in an air-quality map of the British Isles. As a criterion for using lichens to identify areas of clean air, they were told, "The more it sticks out, the cleaner the air!" Scientists also use smaller-scale

"Birches" near Mt. Baker, Washington, are in fact brown-barked alders covered by white lichens.



An arctic and alpine lichen absorbs only silver from water and soil; golden plover uses it for building nests.

and more sophisticated distribution-mapping techniques for monitoring air pollution.

Other pollution studies exploit the lichens' ability to accumulate metals and other elements from rainwater and dust. By chemically analyzing lichens around an industrial-emissions source, researchers can determine how far the pollution has spread. There is increasing evidence that lichens are sensitive to acid rain as well as to air pollution.

Outside the big cities and away from acid rain, lichens are easy to find, richly ornamenting trees and rocks with their graceful, sometimes bizarre shapes.

Lichens that grow on rocks are often colorful, with bright oranges and yellows among the greens, browns, grays and blacks. Most of these are crustose lichens, which grip the rock so tightly that they can't be removed intact. Coastal rocks are often tufted with shrubby lichens that take advantage of the ocean fog. Above timberline in the mountains, natural rock gardens are decorated with colorful crustose lichens and leafy dark brown lichens in disks and rosettes.

Almost everywhere, we see lichens on tree trunks and old fence posts. When deciduous trees lose their leaves in the fall, they often display a rich growth of lichens on their branches. Hidden along the branches

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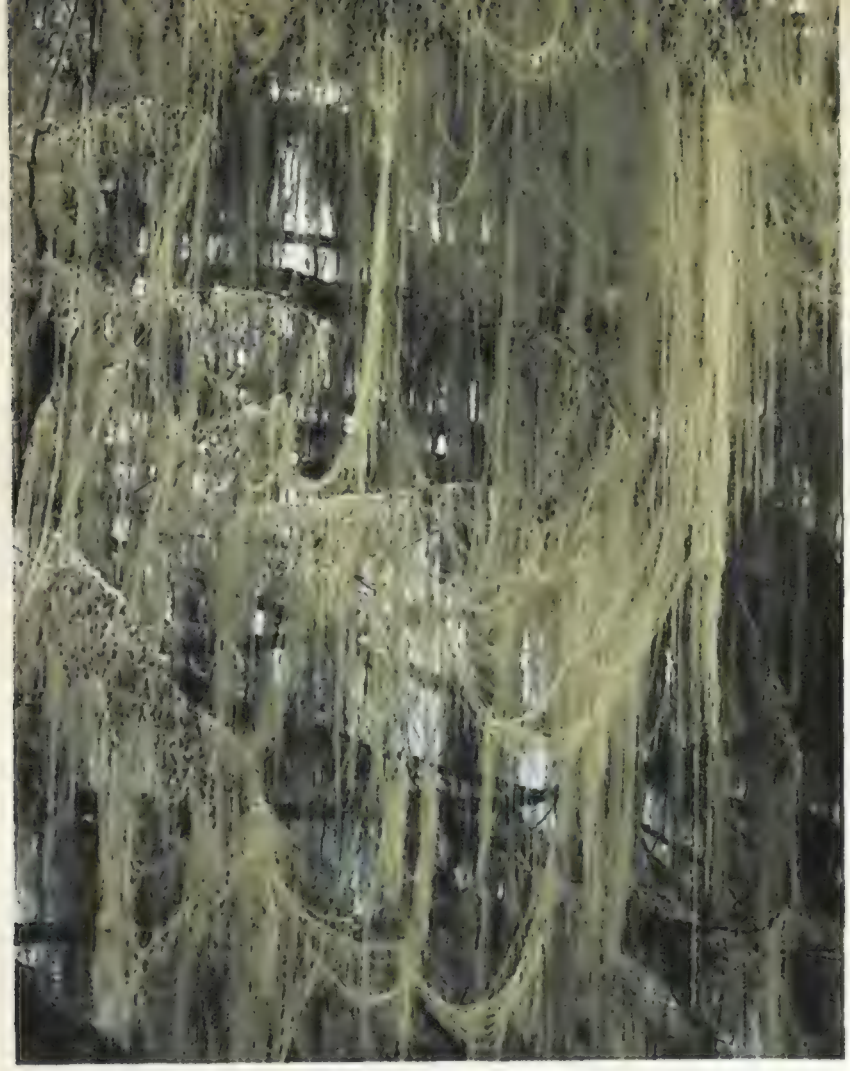

Graceful *Usnea* is harvested in Europe and China for its antibiotic properties, common in lichens.

This lichen accumulates radioactive fallout, which has been detected in deer that browse on the plant.

of evergreen trees, lichens occur as crustose patches, leafy rosettes and ruffles, shrubby tufts and strands that hang like tangled hair.

In barren places such as steep cliffs and lava flows, lichens are called "plant pioneers" because of their role in creating soil. As MacMillan wrote, ". . . wherever they fasten their tiny fangs, the process of disintegration commences. . . ." Very slowly they break down rock chemically, taking in minerals and converting them into biologically usable compounds. They cause small fragments to break off, some of which become incorporated within their bodies. When bits of dead lichen collect in crevices and start to decay, the nutrients and mineral fragments they have accumulated are released into the developing soil. W. Lauder Lindsay, an early lichenologist, wrote, ". . . Lichens are of infinite importance as handmaids of Nature in operating her changes on the face of our globe—in softening down the pointed crags of our mountains—in covering with fertile soil alike the bare surface of the volcanic lava and the coral islet—in a word, that they are the basis of soil and consequently of vegetation. . . ."

Although lichens' importance in building soil has sometimes been exaggerated, their enriching role is well documented. All living things require nitrogen to build proteins and DNA, but only a few, including blue-green algae, are able to take it from the air and convert it into compounds which other organisms can use. Lichens with blue-green algae contribute significant amounts of nitrogen to their habitats everywhere —from the Arctic to desert soil crusts to lumber-producing forests of the Pacific Northwest.

### *Chemical cornucopia from a humble plant*

Lichens owe their special qualities as medicines and dyes to a rich assortment of chemical compounds which only they can produce. It is thought that more than half of the species have antibiotic properties.

From the genus *Usnea*, stringy, gray-green lichens that usually grow on trees (top left), some were used as medicine by the ancient Greeks and Chinese, particularly for gynecological disorders. More recently they have been applied medicinally in Uruguay. In East Africa, they are used to treat stomach aches; in Malaysia to treat colds; they are made into antibiotic salves in Europe. Fifteenth-century Europeans believed that some plants, including several lichens, carried "signatures" of their uses: resemblances to parts of the human body or to disease symptoms. Consequently, long strands of *Usnea* were thought to be good for strengthening the hair.

The Dakota Indians chose an *Usnea* species to dye porcupine quills, the Wylackie to tan leather—other

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lichens have been used for this purpose in Europe. Some tribes employed *Usnea* as bedding material, and in the Simla Hills of India, cushions are stuffed with it. Wolf moss (*Letharia*), a brilliant chartreuse, shrubby lichen, is conspicuous on tree trunks in the mountains of the West. Even though it is poisonous for nearly everything from cockroaches to wolves, many Indians used it to heal running sores. To make poison arrows, the Achomawi soaked arrowheads for an entire year in wet *Letharia*—sometimes with rattlesnake venom added. *Letharia* was mixed with powdered glass and hidden in bait to poison wolves in Scandinavia.

A dark brown lichen, *Bryoria*, is called "tree hair" in some Indian languages. In the mythology of the Okanagan-Colville Indians, Coyote became entangled in a tree while trying to catch some swans. He managed to get down, but he left most of his hair caught in the branches. So that it would not be wasted, he turned it into lichen for the people to use. Several explorers who visited the Pacific Northwest and western Canada in the early 19th century reported that the Indians baked masses of *Bryoria* in pits, producing a black paste which they shaped into loaves. Those who sampled this dish usually found it distasteful. (Some species tend to contain the same bitter chemical that makes *Letharia* so poisonous.) Even so, a few of the Indians considered it a delicacy, and many tribes ate it as a famine food. The Nez Percé used *Bryoria* to treat digestive ailments, and the Okanagan made it into a salve to protect the navels of newborn babies against infection. When the Thompson Indians couldn't get animal skins, they laced together twisted strands of *Bryoria* to make clothing and shoes.

Greenish lichens that hang from trees are often confused with Spanish moss, a plant that grows in the Southern states. The Kawiisu Indians of Southern California believed that one hanging lichen, not clearly identified by anthropologists, was a powerful agent for weather control: when put in water and weighted down with a stone, it brought rain; the rain stopped when the lichen was taken out and thrown away. Lightning and thunder could be chased away by putting the lichen into a fire.

Oakmoss (*Evernia prunastri*), a shrubby, gray-green lichen with antlerlike branches, is harvested by the ton in Yugoslavia and Morocco for use, since ancient times, in the manufacture of perfumes. It acts as a fixative for other fragrances and adds its own scent.

The manna lichen (*Lecanora esculenta*) occasionally falls from the sky in the Near East. Loosely attached, it is easily blown by the wind and accumulates in crevices. Every so often, a wind storm collects a huge amount and drops it in deposits several inches deep in some unexpected spot. In the past, the lucky recipient made it into bread. The nomads of the Kirghiz steppe regularly sought out accumulations. It was called "wonder grain" in eastern Turkey and "bread from heaven" by the Kurds. Some scholars think this lichen was the Biblical "manna from heaven" which saved the starving Israelites wandering in the desert.

Most lichens grow extremely slowly; some are among the oldest living things on Earth. As air pollution, acid rain and agricultural chemicals spread into their habitats, the hardy lichens slowly succumb to the unintended effects of industrial civilization. If we lose the lichens, we lose with them their enrichment of the soil, their wealth of irreplaceable chemical compounds and their subtle enhancement of the visual landscape.

No matter how improbable the substrate, some lichens will grow on it; only polluted air can stop them.

An angel's face on a Cape Cod gravestone appears to be slowly vanishing behind clouds of lichens.

*By Edwards Park*

# Gen. Washington does a TV turn for Gen. Motors

*But the goings-on are less cluttered with Revolutionary myths and misapprehensions than any viewer would have expected*

George's angel, before Martha at least, was his flirtatious neighbor Sally Fairfax (Jaclyn Smith).

George Washington lived all his life in the 1700s. He was a product of 18th-century class structure and strict rules of behavior. With extraordinary self-discipline, he learned the responsibilities of his position and pretty much hewed to an austere, almost Roman, code—honor, integrity, devotion to duty. One result is that by the standards of today's television era, Washington often comes across as a dull stick—which he certainly was not.

The television industry has been around only since the 1940s. It is a product of Show Biz, nourished by Big Bucks. It too has a class structure of agents, flacks, wheeler-dealers and—oh, yes—talent. It lives by two rock-hard rules: get the ratings and sell the goods. Naturally it invites cheap shots and stands accused, sometimes quite unfairly, of being a mere mill for commercial pap.

Washington is an authentic American hero, and I idolize him. Television is an authentic American success story, and I admire its potential, cheer its better efforts, and stare devotedly at the tube, always hoping for the best.

But how will the two live together when one becomes the subject for the other? That is what is happening in an eight-hour CBS miniseries devoted to the life of Washington, sponsored by General Motors, that starts on April 8. What in the world is a man like Washington doing in a place like popular television? To get an idea of what to expect from this leap across a generation *chasm*, I visited Los Angeles to talk to the people who are putting on the show.

First stop was breakfast at the Hotel Bel Air with David Gerber, the executive producer, and producer-writer Richard Fielder. It was not an auspicious introduction. The Bel Air, off Sunset Boulevard, is so discreet that unless you are connected with "the industry" or are the scion of an old Angeleno family, you'll do what I did: drive right past it a couple of times.

So I was late by the time I saw cars parked beside a green awning. Rolls Royces? Heaven forfend! The place would never suffer such ostentation. I found my people uneasily eating croissants and glancing at their watches. I apologized, feeling sore that this truly grand hotel's painful modesty made apology necessary.

What, I thought savagely, would these Hollywood honchos do to my upright hero? Get some cowboy star to play him with a good-ol'-boy accent? I visualized screened nonsense about chopping the cherry tree and tossing that damned dollar across the Potomac. I pictured a dowdy Martha Washington and an army of today's Revolutionary War reenactors, with spectacles and beards and largish stomachs, which were not fashionable among the boys of '76. The show would be stuffed with portentous speeches and phony battles. . . .

"I suppose you want to ask some questions about cutting down the cherry tree and throwing a coin

Fortyish George (Barry Bostwick) poses with Martha (Patty Duke Astin) in the doorway of Mt. Vernon.

National Portrait Gallery/Museum of Fine Arts, Boston

Older Washington's false-teeth look (visible in this Stuart portrait) gave actor Bostwick problems.

During the Battle of Trenton, December 26, 1776, excited Continentals mop up the Hessian stragglers.

across the Potomac?" Gerber's cool voice intruded. And now I looked at him with sudden understanding. *He* thought that *I*, as a member of the Liberal Media, would be out to poke fun at the great general.

From then on, everything went well. Gerber and Fielder fielded most of my obvious questions practically before I asked them. For example: "There are damn few spectacles or potbellies among the troops. Mr. Flexner wouldn't allow them. The fattest man is General Knox, because he really *was* big." George Washington would be no cowboy. Mr. Flexner would never stand for *that*. The actor who plays him, Barry Bostwick (late of *The Rocky Horror Picture Show*), had ridden a horse but needed lessons to look as much at home on one as Washington. One horse bolted with him during the filming and knocked down two tents and a sound technician.

Young George's love affair with his rich and fashionable neighbor, Sally Fairfax, is played as it apparently was—a flirtation on her part, carefully held in check by him so that honor remained intact all around. That's the way Mr. Flexner saw it. He also approved of the casting in the role of Sally: beautiful Jaclyn Smith, the radiant brunette in *Charlie's Angels*.

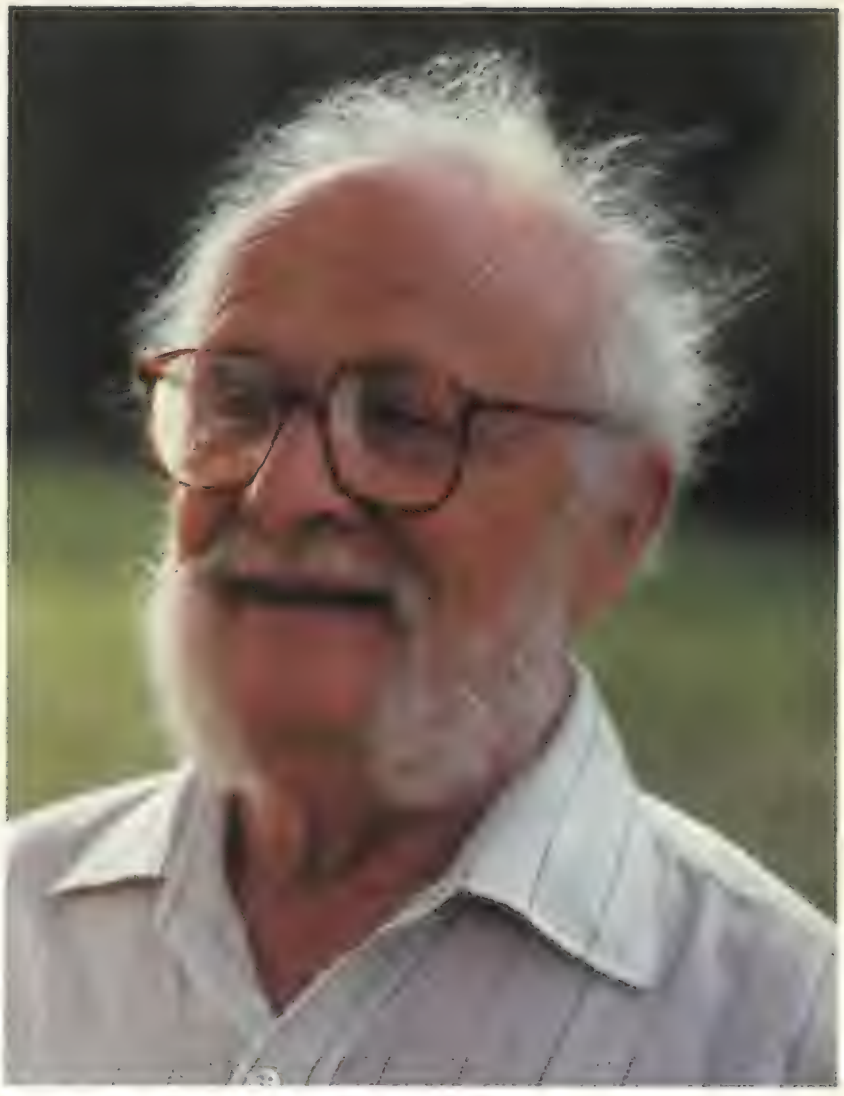
The miraculous Flexner, of course, is James Thomas Flexner, whose four-volume biography of George Washington is the last word in defining and delightfully vitalizing the man who has been so thoroughly disguised by legends, statues, dollar bills and February car sales. Everyone I talked to referred to the film's history adviser as "Mr. Flexner." The TV show, in fact, was first conceived when David Gerber happened to dip into Flexner's biography five years ago.

"My God! What a character!" Gerber's eyes shone as he recalled first looking into Flexner's *Washington*. "Here was a hero in the truest sense, a fighter against tyranny who clung to his own integrity . . . his incredible sense of honor . . . *you* know." I nodded. "And no one had ever really *done* him! Can you believe it? This strong, wonderful, vital person who reshaped the world. So, naturally. . . ."

"During the shooting," says Fielder, who managed to survive the task of rewriting the historian to the demands of a popular scenario, "everybody got sort of

*Contributing Editor Edwards Park is the author of a new book,* Treasures of the Smithsonian. *He writes frequently about American history.*

King George's mercenaries had been caught totally off guard by Washington's daring surprise attack.



Film's adviser, historian James Flexner, got into one scene—with inauthentic muttonchop whiskers.

infected by Mr. Flexner." Barry Bostwick apparently carried around the one-volume version of the biography, *Washington: The Indispensable Man*, and read it between takes. "Mr. Flexner was with us during some of the shooting," Gerber puts in. "You know, the author is often sort of an uncomfortable addition to the set. But not this one. We all kept asking him questions. After all, this was *Washington*."

The filming took place in and around Colonial Williamsburg, at Mount Vernon, in Philadelphia and on the old battlefields—at least where they hadn't changed too much. Winter shots were done at Valley Forge with man-made snow supplementing nature's supply to make it look like 1778.

"Winter at Morristown was actually worse," Gerber said, reflecting on history, not filmmaking. "The big trouble at Valley Forge was hunger."

"Damned profiteering farmers," Fielder mutters, half to himself. Hey, wait a minute, I think, they actually *lived* it! I look at them carefully, these two TV biggies. They look back, eyes distant. They are not putting me on.

Inevitably, one winter scene involved crossing the Delaware. The TV army used a couple of Durham boats—authentic craft that are on display at the site where the Continentals crossed over from Pennsylvania to New Jersey in December 1776 to take Trenton by surprise.

I was shooed off to meet Martha and George—that is, Mrs. Astin and Mr. Bostwick. Patty Duke Astin first. The devastating 12-year-old who played Helen Keller in *The Miracle Worker* 25 years ago is now a much-honored actress. At five feet she is as tiny as Martha Washington was, and certainly as bighearted as we picture the first First Lady. She's the kind of person whose eyes can suddenly fill with tears while she describes something that she feels strongly about.

"What did *I* know about Martha?" she asks. And answers "Nothing." She dug around for hints and talked with Mr. Flexner and realized that Martha really cared deeply for her husband and missed him when he was away. "But it was hard to show affection," she recalls. "Barry, at six feet three, is as much taller than I as George was than Martha. I tried hooking a finger around his waistcoat button to pull him down to me and it felt awkward at first and then became second nature." She notes that Dick Fielder wrote in a bit about Martha caring for the sick during the

Valley Forge winter. Mr. Flexner said it was all right—just the sort of thing Martha would have done. "And we also have a scene when I tell Barry I have known all about Sally, his first love, and that I understand completely." (Here the eyes watered.) "Mr. Flexner said *that* was all right, too."

Sally Fairfax was older than George and married to his best friend. She took it upon herself to help young Washington master those pesky rules of etiquette that were so useless on the frontier, where he liked to be, and so necessary in the Virginia society that claimed him when he came back to the Tidewater plantation country in the 1750s, after fighting Indians. Sally has been described as a beautiful, vivacious Southern belle, though the only portrait makes her look a fright. Flexner—and everyone else—prefers to believe that she looked like Jaclyn Smith. Anyway, she got pretty fond of George, and he apparently fell hard for her.

"But what about their affair?" Barry Bostwick asks me when we lunch together back at the good old Bel Air, which us old Hollywood hands have no trouble in finding. "Do you really think they never went to bed?"

"That's what Mr. Flexner says," I answer carefully. Flexner and other historians have pointed out that the code of the gentry winked at many romantic peccadilloes, but would not forgive a serious affair with the wife of a friend. Barry thought it hard to believe, but despite considerable temptation, that's the way he and Jaclyn played it. Bostwick is a very tall young man with good shoulders and the same auburn hair that Washington had. Unlike Washington, though, he has a very fine set of white teeth. Washington had all that well-known trouble (SMITHSONIAN, February 1973).

"What about your teeth?" I ask. The series, after all, carries George up to 1783 when he bade farewell to the Army in New York—after he got false teeth.

"I sort of turn my upper lip down over them," Bostwick says, "as if one of those little springs in his false teeth hurt me. They weren't made of wood, you know."

"Let's see." Barry pulls his upper lip down, and suddenly has the same mumbly look as Washington's.

Publicity still of Delaware crossing features fake ice. Other cinema angles have a more realistic look.

### *"We shaved the heads of people playing Indians"*

"Anything funny happen during the filming?" I ask.

"What was funny was how well we got on together," he replies. "Mostly, that is. We had to shave a certain number of heads of people playing Indians—warriors, you know, fighting General Braddock. This is a big deal for actors because once your head is shaved, that's it until your hair grows back. One time we shaved one too many actors. The guy got furious."

Braddock, a British general under whom Washington served in 1755 during the disastrous battle for Fort Duquesne in the French and Indian Wars, was played by James Mason. Bostwick says that acting with him was unforgettable. "Histories make us think of Braddock as a fool. I'll never think of him as anything but James Mason. It's funny," he goes on, "how in the East all those Colonial names show up on street signs. I'm a Californian and always thought we lacked all that sense of history. And just the other day, driving to the MGM studio, I realized that for years I've been passing Braddock Drive. I never noticed before."

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To my infinite regret, I didn't get to meet Jaclyn Smith, but when I finally caught up with James Flexner (back in New York) I started out by asking how he liked her. "We quickly discovered a mutual devotion to the standard poodle," he said. "We both own them. From then on we were friends."

Mr. Flexner, at 76, is small and straight-standing, with a wonderfully elfin look masked by muttonchop whiskers. In doing the Washington biography, he says, he cleared his mind of everything he'd read about the Father of His Country and went after the man's own writings—every scrap he could get his hands on. Only these, he felt, would truly reveal character. The result, first published in 1965, was a fresh approach to a historical monument, uncluttered by myth or hero worship or revisionism. In Flexner's handling the general emerges "both lovable . . . and one of the greatest leaders in the history of the world."

When David Gerber bought television rights, Flexner had some suggestions which Richard Fielder found "helpful." Next thing Flexner knew, he was on the set, being consulted, being listened to.

"I didn't even own a TV set," he told me. "I suppose it's true that only a virgin can lead a unicorn. Anyway, I had a rejuvenating sense of being necessary. I've tried to maintain the intention of the series, a tone of dignity, true characters and an understanding of 18th-century American society." Flexner was amazed by how completely his notions were accepted. "I had no legal right to dictate to Dick Fielder, or to Barry or anyone."

He is not too stuffy to admit that his days on the set were great fun. "I enjoyed the young people. Barry is really an interesting man, and I did like being flirted with by Jaclyn." He got into one scene—appearing unobtrusively, like Alfred Hitchcock, beside the Virginia House of Burgesses in Williamsburg. "What about your whiskers?" I asked, thinking of his own firm rules against inaccurate facial adornment in Colonial times.

"They were a problem," he agreed. "No one that I know of wore muttonchops in those days. But I wanted to appear, and we decided some poor old galoot might have shaved himself this way. So there I am, looking a bit like the Emperor Franz Josef."

In some perplexity I quit my new show-biz friends. Were they all really filled with ardent devotion to scholarship? To light and verity? Or was I simply spotted as a patsy? Perhaps. Yet I have the cheerful feeling that *George Washington* was done, willy-nilly, with a certain integrity.

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*By Carollyn James*

# A field linguist who lived his life for his subjects

*Smithsonian anthropologist John Harrington raced against a time when Indian languages would disappear*

Happiest in the field, anthropologist John Peabody Harrington often camped with his touring car while learning Indian languages.

To hear some anthropologists tell it, John Peabody Harrington was fanatical. According to his ex-wife, Carobeth, 50 years after their marriage, he was rude and perfidious. Those who actually worked with the anthropologist, however—his field assistants and the American Indians he studied so single-mindedly—thought as highly of Harrington as he did of himself. Recalling his eccentricities could become a national pastime, but his contributions to linguistics and to our knowledge of Indian culture are what make his compulsive work habits so valuable to us now.

While working for the Smithsonian's Bureau of American Ethnology (BAE) from 1915 to 1954, Harrington transcribed large and small portions of a hundred Indian languages, collected more than two million pages of notes, and made 5,000 sound recordings. Elaine L. Mills, editor of the John P. Harrington Papers at the Smithsonian's National Anthropological Archives, calls this legacy of paper, wax cylinders and aluminum disks "perhaps the most extensive collection of its kind." With a small staff, she has spent the past seven years organizing and cataloguing Harrington's papers for a complete microfilm edition, funded by the National Historical Publications and Records Commission as well as the Ahmanson Foundation. After the project is finished later this year, the scholars, Indians and lay students who have already spent thousands of days working with Harrington's unique materials will be able to save the trip to Washington.

In some cases, Harrington's informants were the last known speakers of a language; some interviews were conducted at the deathbed. He was, as he saw it, saving their culture "from eternal oblivion at the very last hour."

Harrington's wife once complained that he cared more about words than he did about people. But linguistics was not a profession for Harrington; it was his life's work. He was good enough at it to be distrustful of any work collected by other linguists in the field. His greatest fear was that he would not live long enough to collect personally every known Indian language.

At the turn of the century, field linguistics in America was a relatively new science. Much of the work

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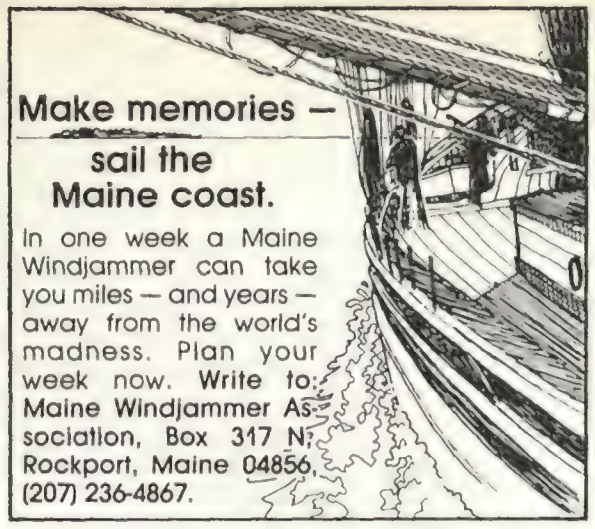
Yokuts medicine man demonstrated a dance for Harrington about 1916.

being done consisted of collecting vocabularies and producing dictionaries. A linguist lived with his subjects, collecting words and writing out texts by transcribing them phonetically. Harrington thrived on it. He camped from the back of his car or in a shack lent him by an informant. Most of the money he received from the BAE went to his informants and to further his fieldwork.

Besides the sheer volume, what sets Harrington's work apart from much of what was then being done was the information he collected over and above the language itself. He let his informants ramble on, talk about things in general. As a result, he recorded religious myths and customs, local history, medical practices and genealogies. His data have proved invaluable to modern linguists, Indian historians, botanists, geographers, archaeologists, and to native Americans reconstructing their heritage.

Born 100 years ago this month in Massachusetts, Harrington grew up near Santa Barbara, California, where he early showed the approach to work that would guide his life. As editor of a high school magazine in 1902, he advised the student body that fewer editors were needed: "Three can do the work as well as ten." He studied

*Carollyn James is an editorial researcher for* Science 84 *magazine.*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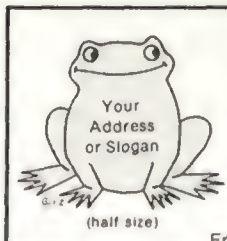


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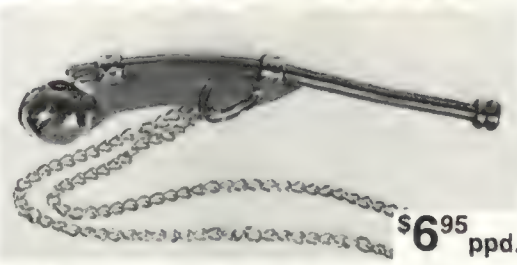

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classical languages at Stanford University, and graduated in less than three years. He continued his studies, including theoretical linguistics, at German universities, but did not earn a doctorate.

Harrington got off to a shaky start in anthropology. A. L. Kroeber, a leading anthropologist of the day, offered him an assistantship. He turned it down and instead taught high school languages. But Harrington wanted to work with native American languages. About a year later, he delivered a paper on the Mohave to a local club. The town paper called him "the first man to have taken down . . . their myths."

A few years later, Harrington heard that another anthropologist was interested in studying the Mohave. "I regard this as more or less of a dirty trick," he quickly wrote the BAE. "I am tied up as you know so that I cannot publish on the Mohave without loss of more important work, but it will certainly result in a duplication of published material. . . . I hardly know what to do or what I can do."

With Kroeber his relationship was always strained. When Kroeber's *Handbook of the Indians of California* was to be published by the Smithsonian, Harrington drafted a letter (there seems to be no evidence that he ever sent it) condemning it "as silly and misleading. . . . To place upon it the stamp of the Smithsonian Institution gives its nomenclature a sanction, prestige and standardization which will work detriment to the Bureau and untold cruelty and injustice to all the other men engaged in this field for many years to come."

When Harrington first began working in the field during breaks from teaching, he greatly impressed the anthropologists he met in the Southwest. Matilda Coxe Stevenson of the BAE found him "a most remarkable young man. . . . a most cultured fellow. . . ." She invited him to be her guest at her ranch near Española, New Mexico, while urging the BAE to find a position for him quickly. "One finds such a man seldom," glowed Stevenson.

By 1909, Harrington had quit teaching and was working full-time outside Santa Fe collecting Indian vocabularies and myths. The following year, he taught at the University of Colorado. From then until 1915, when he began working for the BAE,

In the earliest days of his career, about 1915, John Harrington enjoys a rare moment of relaxation with Chumash Indians.

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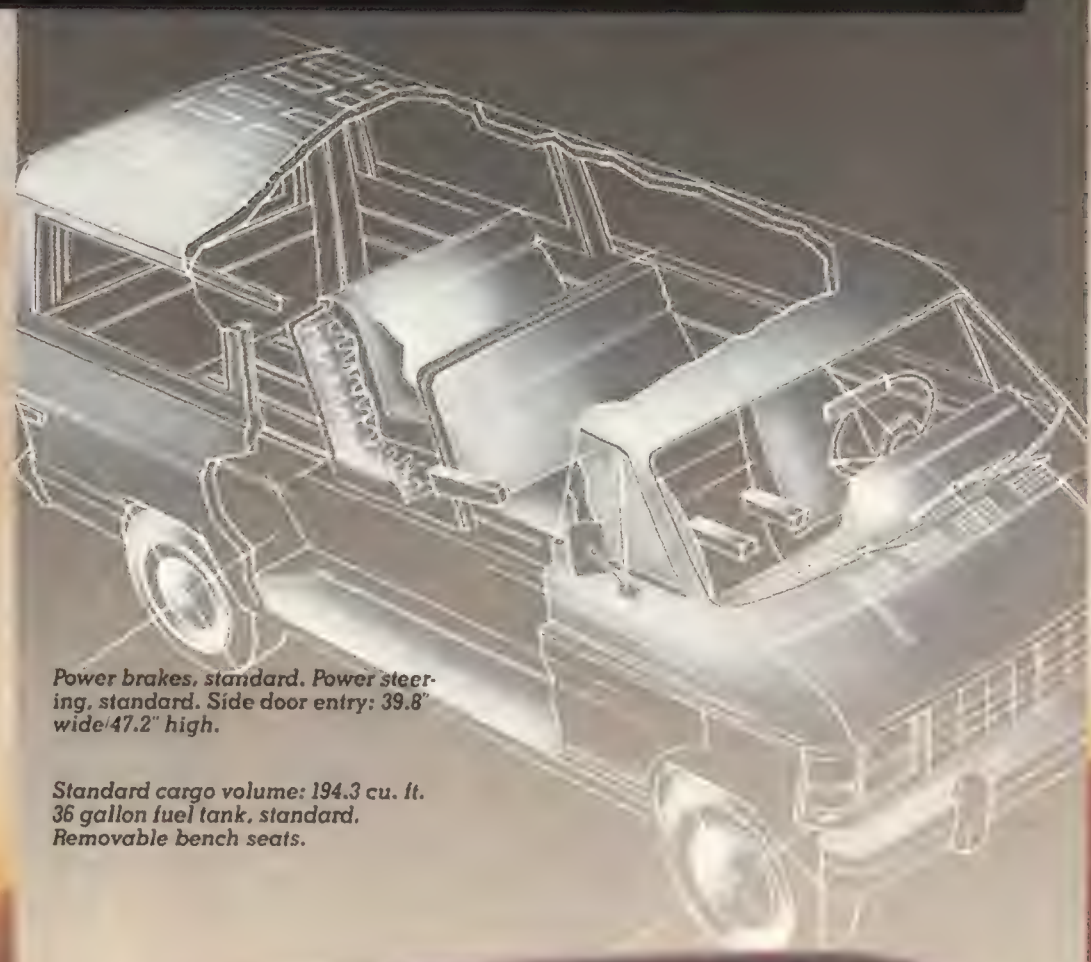

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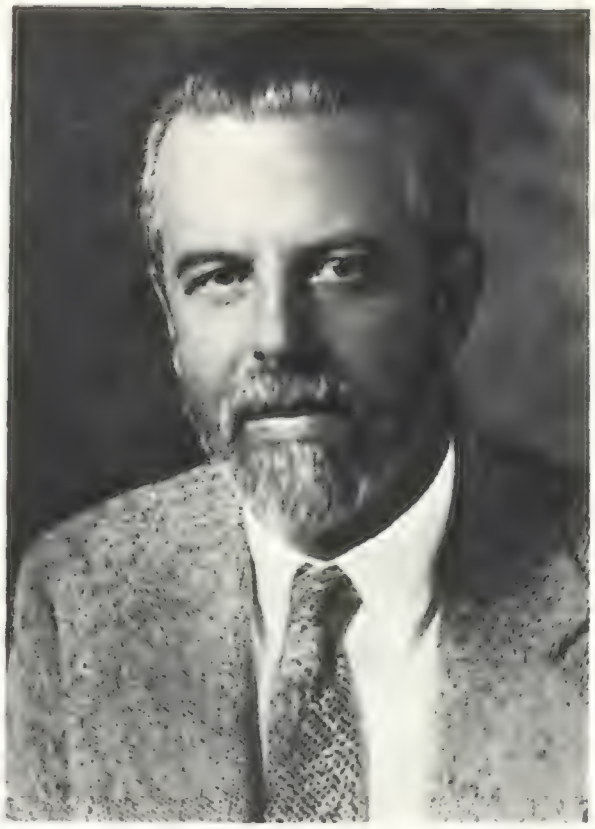

Alfred Louis Kroeber and Harrington had what was at best an uneasy relationship.

he worked for the Museum of New Mexico and the School of American Archaeology (now the School of American Research) and began studying the languages of the California Indians, which became for him a lifelong passion.

Harrington could phonetically transcribe any sound. He had what could be called a perfect ear. Linguists today regard Harrington's phonetic transcriptions as superb, among the most accurate raw field recordings ever made.

In 1915, Carobeth Tucker was just another student to whom he had assigned a transcription. "He said it was perfect, except for one small mistake—I had written 'with' using the symbol for the unvoiced *th* when it should have been voiced. He then asked me to pronounce the word carefully and saw that I had followed accurately my own error of pronunciation." It was understood that she would remain after class from then on. He married her the next year and put her into the field as his unpaid assistant.

His job with the BAE finally en-


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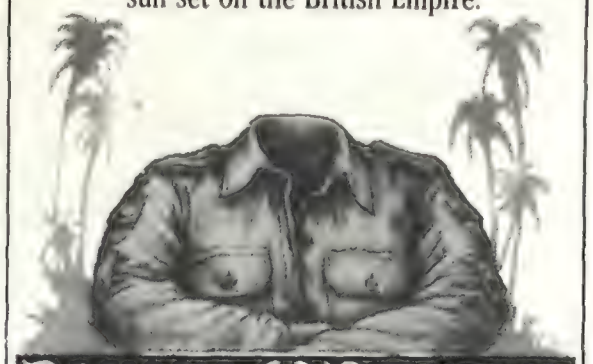

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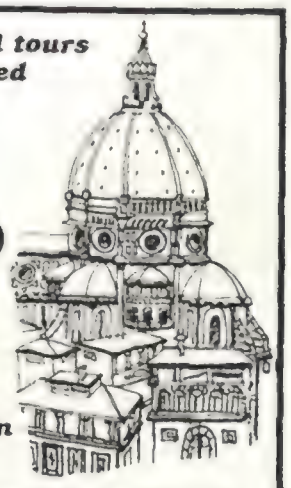

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abled Harrington to do what "had already become his lifework, and he lived in terror of losing it," Carobeth wrote. "He also had a paranoiac belief that every man's hand was against him, that at any moment he might be forced to go to Washington, D.C. and remain there . . . to see his most precious discoveries appropriated by someone else. Therefore all letters and reports must create 'a good impression' and at the same time be as devious as possible, revealing very little of his real activities and plans. He wanted them to show tremendous (if vague) achievements, which needed a little more, just a little more time and money to complete. He struggled over these documents and often appealed to me. . . . Even his signature was cause for anxiety. I must always put a straight line where he could write it with care. . . ."

This same compulsion created an obsession with secrecy. Some of the people who worked with him were told never, never to tell another living soul what they were doing. A reporter in Flagstaff, Arizona, once tried to ask him some questions about

Matilda Coxe Stevenson, Smithsonian anthropologist, helped Harrington start.

Fritz Hanson of the Karuk tribe shows his technique with a bow about 1926.

his work, but Harrington fended him off: "You've got me wrong. I'm not John Harrington. I don't even know who he is."

He would ask lay people, who had no obvious interest in them, to keep papers until he contacted them further. Most were rounded up shortly after his death in 1961, but just recently a trunk of old letters and early field notes came to light in the garage of his brother's home. An anthropologist was once asked by a Salinan Indian if he knew John Peabody Harrington, and the anthropologist admitted that, yes, he did. "Could you get a message to him?" asked the Indian. "Ask him what I'm supposed to do with his boxes. The chickens are getting into them."

He never really felt that as an employee of the BAE he had any other responsibilities besides doing his own fieldwork. He never appreciated the fact that he was expected to publish everything he had found. It was a career-long tussle between the Bureau and Harrington. The Bureau would expect him to return to Washington, after stints in the field, and Harrington would expect the Bureau to let him use his own discretion.

The BAE could reach him only by mail, and Harrington avoided the letters. He enlisted the help of friends to hide his whereabouts from his supervisors. The best the BAE could do was write to him at his last known


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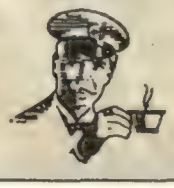

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address, where Harrington may not have been in months and when, in fact, he may have been hundreds of miles distant.

A former neighbor, Blanche Seeley, for instance, was instructed to forward his mail to him in secret. The BAE, in trying to contact him, began one letter: "Not being certain as to your current address, I am sending copies in duplicate to Seattle and to Taholah."

The draft board in World War I was Harrington's specter of doom. If nothing else could keep him from his work, the Army could. Once he asked Carobeth to run the car over his leg to disqualify him from service. "He would recover, he argued, being lame would not seriously handicap him in his work." She didn't do it, and Harrington then went to his father-in-law, who was supporting Harrington's infant daughter, Awona, and another child of Carobeth's, and convinced him to have Harrington listed as sole support of both children—although he was not contributing to their care.

During World War II, when Harrington was too old to be drafted, he received a notice to return to Wash-

Informant Hanson demonstrated how to draw on a pipe to start it properly.


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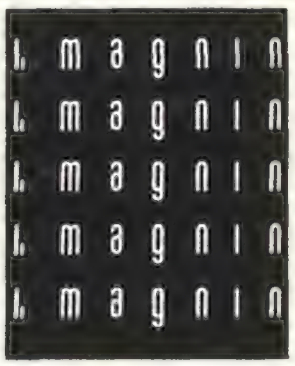


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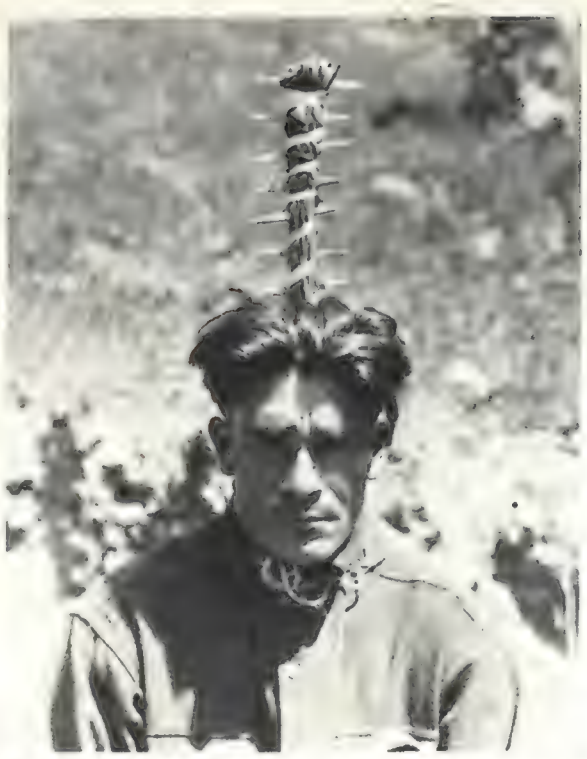

Informant Ben Donohue shows unusual hair style, maybe to look fierce in battle.

ington. "The Budget Committee has sent a questionnaire which is apparently designed to cut off all employees . . . not engaged in work dealing directly with the war effort. . . . At present you are the only member of the staff whose work cannot be defended to the Budget. . . . I would urge that you return to Washington as quickly as possible. . . . If this is not done and quite soon, the danger is very real that the Budget will order you dropped from the staff," wrote Matthew Stirling, head of the BAE. Harrington ended up working for the Office of Censorship, checking mail in foreign languages.

Harrington hoarded linguistic information that he felt was rightfully his. While belittling his fellow linguists, he was never above entreating them for their sources, and was usually told them. His own sources, of course, were personal—besides, it would be futile to duplicate his fieldwork. "I did our work in perfectly good faith," wrote Edward Sapir, one of the few linguists Harrington respected, "without the slightest inkling that we were going over ground already completely traversed by yourself. Would it not have been wise for

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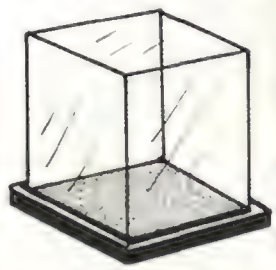

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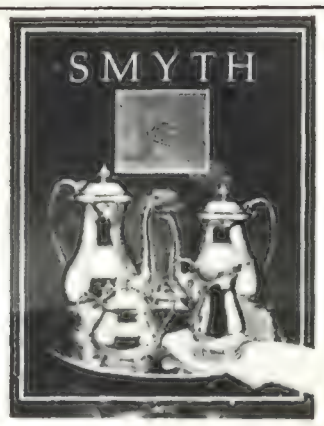


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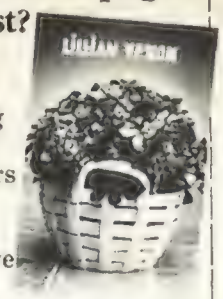

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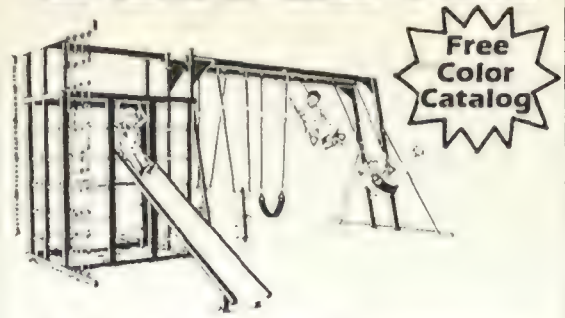


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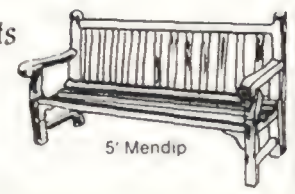


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you to have made your field trips known? . . . It is my opinion that there should be no secrecy whatever about such matters. I am very far from making a fetish out of the avoidance of duplication of field work. . . ." Harrington himself checked over much research done by other linguists, but he did not regard this as duplication since, in his view, the information was reliable only when he had verified it.

Of the hundred languages on which he collected data, he had enough information on several to compile extensive dictionaries. But he published only one, of Kiowa, as well as three collections of Karuk texts and a number of short papers. In the annual reports submitted under duress, he inevitably alluded to greater works in progress, but they were never forthcoming. He would avoid returning to the Bureau by saying that he had to stay "right here and write the book, getting it ready for the printer here while I can still ask questions to fill the gaps and increase the correctness."

Much of Harrington's work was published after his death: a continuing series of short papers and several volumes of Chumash mythology and

During 1923, Harrington headed an archaeological team at California site.

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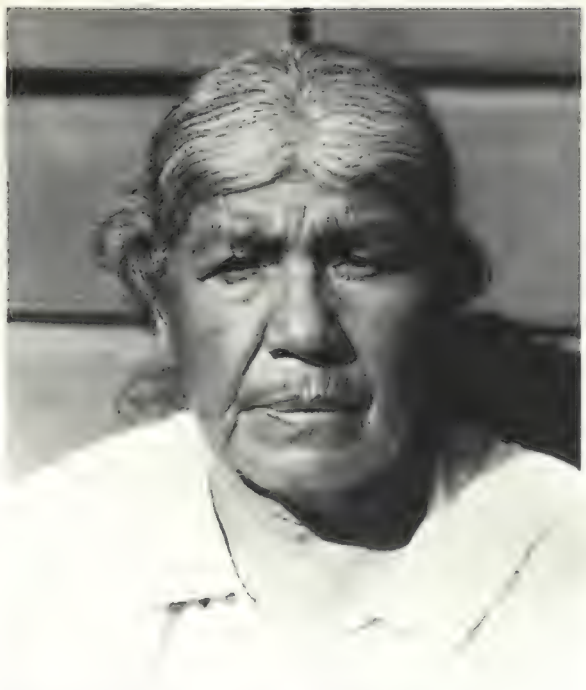

Ascención Solórsano: when she died, Harrington wrote a poem for her.

culture. Some of these have been compiled or edited from Harrington's materials, but others are complete works published essentially as he left them.

He reserved most of his real respect for native Americans. And his respect went beyond the information they had. Their way of life was for Harrington the more natural way to live. He paid his informants well and extended to them every courtesy he could offer. One snowy night, Harrington, Carobeth and an old Indian were stranded and needed a place to sleep. Harrington went to the proverbial house with a light burning and asked for shelter, explaining that he had an old Indian with him. He was refused. The man in the house looked out the window, saw them struggling to stay warm and called Harrington back: "God Almighty, why didn't you tell me you had a woman with you?" Carobeth recalls Harrington missing the point and muttering, "But I *told* him I had this old Indian with me."

Harrington was as thankful for having found his informants as they were for what they understood him to be doing for them. When he discovered Mrs. Ascención Solórsano in 1929, she was bedridden by a tumor and age. Like several of his infor-

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MCDONNELL DOUGLAS

mants, she was the last speaker, in her case of Mutsun, a language of coastal California. "I feel like humbly thanking God or the universe or something that she is still alive and, feeble and far gone as she is, able and willing to work." Within a month, Harrington had transcribed more than 2,000 of Mrs. Solórsano's sentences. When she died, he wrote her obituary and a kind of love poem.

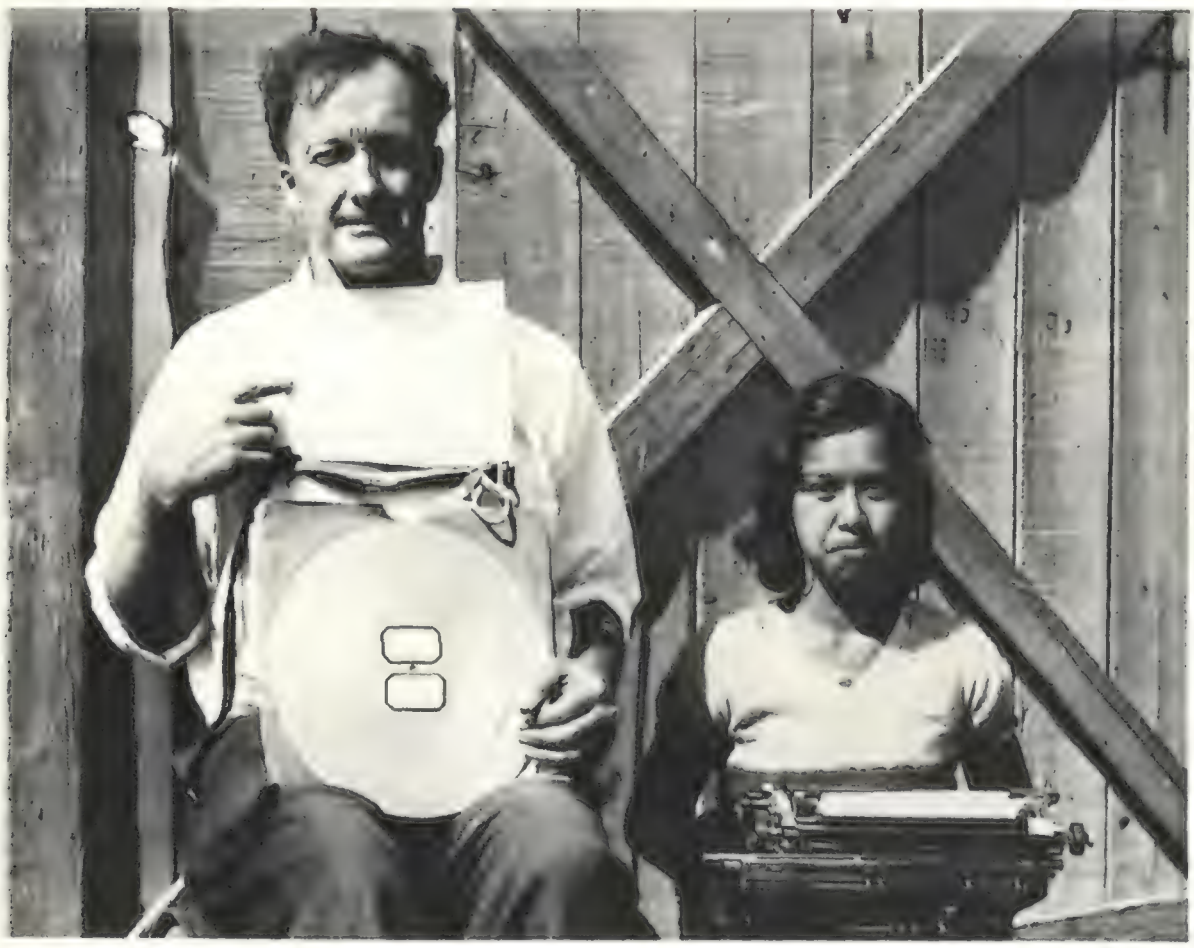
The Yee family in Santa Barbara, California, worked willingly with Harrington for three generations as Chumash speakers. He became a part of their family. And when he became weakened by Parkinson's disease, the father of the family gave up his own bed for Harrington to use.

It was a considerable feat for an outsider, particularly a white outsider, to develop the kind of cooperation Harrington was able to get from his Indians. He remained nonjudgmental and always more appreciative than someone who might have been just doing a job, almost as if he never thought of all the creature comforts that he was being deprived of while collecting.

Carobeth, however, longed for those things Harrington found "artificial," like regular baths. There was a terrific argument when Carobeth suggested they might consider finding a home with a yard. Harrington was repelled at the idea of a lawn; children, he maintained, should be raised in dirt. "To him children were scarcely people," and Carobeth included their daughter. "He talked . . . at length about the possibility of bringing up a child without ever talking to it or allowing it to hear human speech in order to see what kind of language would evolve."

After Carobeth divorced him and married Harrington's Chemehuevi informant, Harrington began training other nonprofessionals and young scholars as field assistants. In a more perfect world, he would have been able to do all the work himself, but the languages were disappearing faster than he could get to them. He bought a recording machine that at the time was state of the art. It had to be hauled in three large boxes, one weighing about a hundred pounds. But it was "portable," and his assistants could use it without him.

John Paul Marr was one of Harrington's most enthusiastic assistants in the field.



About 1930 Harrington displayed the long sheets he used for field notes and aluminúm disk used for recording. The woman is not identified.

These helpers were carefully instructed by Harrington. Before being sent forth, they were given required-reading lists, specific names of contacts and specific sheets of questions to ask. John Paul Marr, Blanche Seeley's son, began working for Harrington before he was 16. Once Marr got his driver's license, Harrington sent him up and down the Northwest coast. He recorded throughout California, Oregon and Washington: "There are very very few people in this world that would volunteer to do this work for you, John. But I want you to know that I would be at the head of the line, that I would be the person that got my hand up first and that I would go through all that I went through . . . and twice over again if I had to, to get the records made."

Marr lived no better in the field than Harrington would have. He had to endure meals of canned corned beef, live in his car and receive

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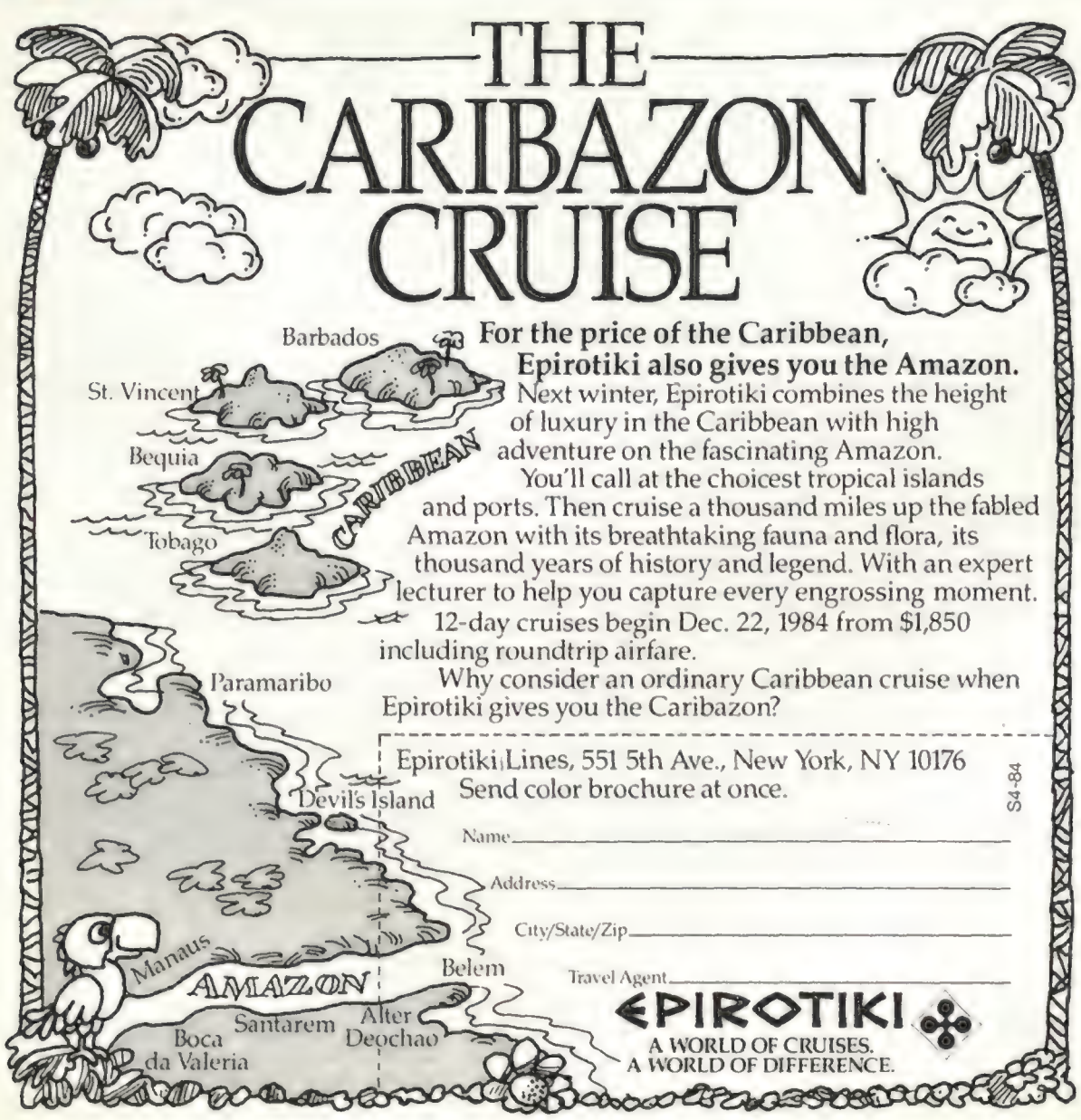
Harrington's letters of inspiration. "The time will come and SOON when there won't be an Indian language left . . . all the languages developed for thousands of years will be ASHES, the house is AFIRE, it is BURNING."

When Marr wrote Harrington that his girl friend had just died, Harrington comforted him: "You know how I look at this work, you and I are nothing, we'll both of us soon be dust. If you can grab these dying languages before the old timers completely die off, you will be doing one of the FEW things valuable to the people of the REMOTE future."

For 40 years, Harrington worked for the BAE as an ethnologist. Somehow, although he never found time to edit much of the tons of notes he accumulated for the Bureau or to write a definitive tract from them, he did find the time to consider publishing poetry books and redesigning the English language to reflect its phonetic pronunciation. He even thought of writing a cryptically-titled autobiography, *40 Orbit-Ebbs: An Indianologist*, which of course he never did.

But the unpublished data have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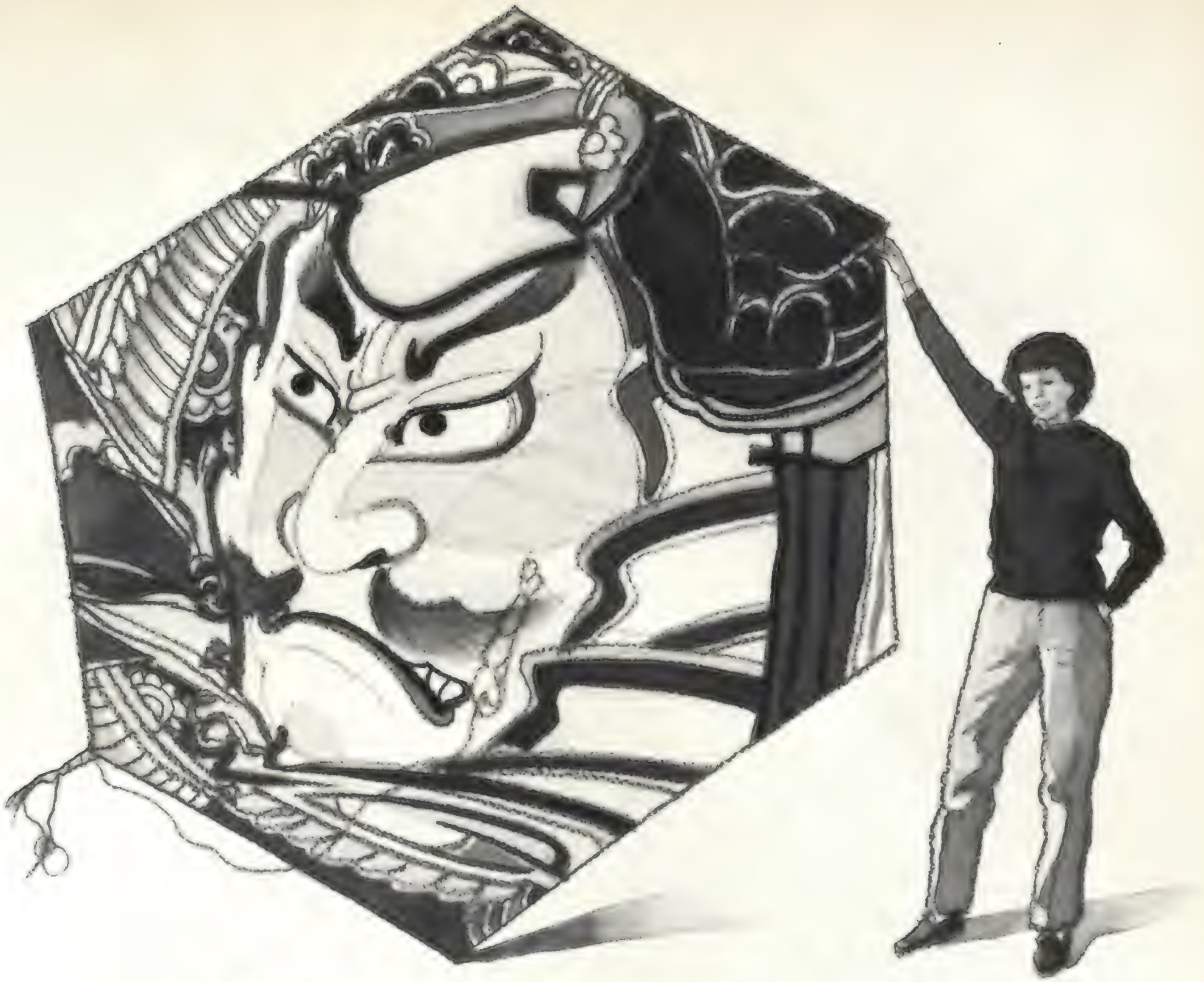
Harrington informant from Southern California was photographed about 1925.



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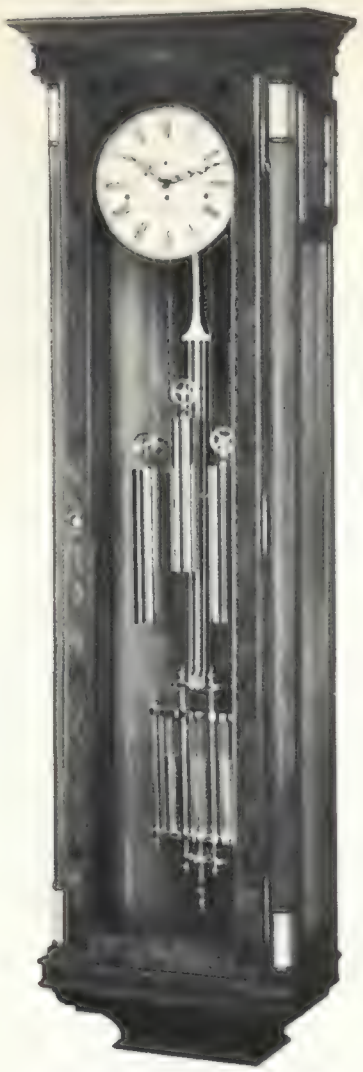

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helped to reestablish tribal languages, cultures and territories. Muckleshoot Indians in Washington State, for example, used Harrington's records to establish their right to harvest clams in a certain part of Puget Sound. His notes have been used to compile the Chumash dictionaries that Harrington never had time for. The Karuk of California have reconstructed some of their history from Harrington's papers, and for native Americans his record albums have preserved songs that would otherwise have died with their grandmothers. He eventually was able to give back to the Indian communities everything they once gave to him.

He retired in California and, when he fell sick, was cared for by the Yees. Awona heard from a secretary at the BAE that her father was near death and found a nurse for him. He died about a month later, at age 77.

John Paul Marr remembers Harrington "like my own father." Carobeth finally began "to have compassion for a very lonely man, a man whose self-imposed isolation was due as much to a deeply rooted sense of inferiority and alienation as it was to dedication to his work."

"Mr. Harrington," remembers Angela Yee, the daughter of his last Chumash informant, "we knew his ways. He knew our way."

Margarita Campos, a Panama Indian, records for Harrington in 1924. Behind them stand her fellow Indians Alfred Robinson (left), interpreter, and James Perry.

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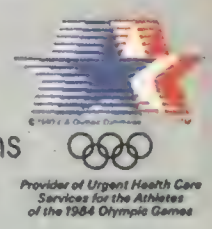

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# *Book reviews*

*A Need to Testify*
Iris Origo
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To tell the truth about other lives, or about one's own life, to restore the past and make it real again, is a task that demands both a scholar's fidelity to fact and the intuition of an artist. So Iris Origo argues in the engrossing essay on biography with which she introduces this, her latest contribution to the difficult craft she has practiced with success over many years, and never more memorably than in *Images and Shadows*, the story of her own exceptional background and career.

Born to an American father and an Anglo-Irish mother, brought up in Italy from an early age, and married to an Italian, Marchese Antonio Origo, she seems to have been destined for the role she has chosen to play as an interpreter of the culture of her adopted country to the English-speaking world. Notable among her earlier works are her study of the poet Leopardi, her annotated edition of the letters of Lord Byron and his Italian mistress, Teresa Guiccioli, and *The Merchant of Prato*, her portrait of a prosperous 14th-century Tuscan. (Another new book, *War in Val d'Orcia: An Italian War Diary, 1943-1944*, will be published this month by David Godine.)

*A Need to Testify* consists of memoirs of four friends: the poet and scholar Lauro de Bosis; the American actress Ruth Draper, who was his lover; the historian Gaetano Salvemini; and the writer Ignazio Silone, who is perhaps best known for his novel *Bread and Wine*. They are brought together in this book because of their shared commitment to freedom and to the need they all felt, in their different ways, to testify against Italian Fascism.

De Bosis is remembered chiefly for a heroic gesture which at once defined and destroyed him at the age of 29. On the evening of October 3, 1931, flying solo over Rome, he dropped upon the city a cargo of 400,000 leaflets appealing to king and people alike to rise up against Mussolini's dictatorship. He had taken off from Marseilles and was supposed to land in Corsica, but he did not reach his goal. Marchesa Origo believes that most likely his plane ran out of fuel and plunged into the Mediterranean, drowning him. She gives convincing evidence that he neglected to see if the plane's tanks were filled to capacity, and suggests that, though perhaps not consciously, he chose to die, thereby giving his act a sacrificial grandeur.

No one was more bereaved by his death than Ruth Draper, then at the height of her international career as a monologist, famous for her ability to create by herself a complete cast of characters, using only a minimum of props and costumes. Although she was apolitical, unlike the others in this book, she belongs with them not only as the lover of de Bosis, but also for the reason that no doubt drew him to her in the first place, in spite of an age difference of 17 years—her own freedom-loving and adventurous spirit.

While de Bosis was a politically conservative aristocrat, both Gaetano Salvemini and Ignazio Silone were socialist in their sympathies and of humble origin: Salvemini never forgot his roots in Apulia in southern Italy, while Silone celebrated in his work his own native region of the Abruzzi. Both men were profoundly Christian in spirit (though outside the Church). And both, because of their opposition to Mussolini, were forced to spend long years in exile—Salvemini chiefly in the United States, where he taught at Harvard, Silone in Switzerland. Marchesa Origo does not discuss in detail Salvemini's work, which includes a history of the French Revolution and studies of Italian Fascism, but her memoir of Silone focuses on his writing. It is from him that she has derived the title of her book: ". . . writing has meant for me an absolute need to bear witness."

To her four witnesses, let us add a fifth

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—the author herself, who during the last war, with her husband, gave shelter and help to refugee children, partisans and members of the Allied armies at La Foce, their estate in Tuscany, showing in this commitment the great sympathy for others which informs her work and validates it.
*Richard McDougall*
Literary critic and author of *The Very Rich Hours of Adrienne Monnier*

*E. B. White, A Biography*
Scott Elledge
Norton, $22.50

For John Updike, who knew him at *The New Yorker*, E. B. White's special quality was "how much more *fun* he had in him than us younger residents.... Not loud or obvious fun, but contained, inturning fun, shaped like a mainspring." For critic Benjamin De Mott, White's gift is the "music" of his prose. "The man knows all the tunes, all the limited lovely music that a plain English sentence can play." Jean Stafford once wrote to thank him for *Charlotte's Web*, claiming that it had helped her to recover from a nervous breakdown: "I give you fully as much credit as I do my good doctors for relieving my terrors. Thank you for this and for everything else you have written and will write."

As a writer, colleague and friend, E. B. White still inspires respect and affection. He is, by all accounts, a kind man, intelligent but without intellectual pretensions, literate but not "literary," down-to-earth, generous, sincere. Now 84, he still lives in the Maine farmhouse he bought in 1933. And this biography by Scott Elledge, 15 years in the making, is nothing less than a tribute to his life and work.

Elwyn Brooks White was born in Mount Vernon, New York, in 1899, into a large and loving family. In 1925, when his first piece was published in *The New Yorker*, he joined another family: it would grow large and not always be loving, but it allowed him to develop and perfect the kind of personal essay that became his hallmark and gained him a wide, appreciative and loyal audience. For many years, the magazine *was* E. B. White—his special wry humor, his sense of irony, his "Notes and Comment" on cosmopolitan life. He seems, as witness to his volatile times, unshakable.

Yet White's apparent equanimity often

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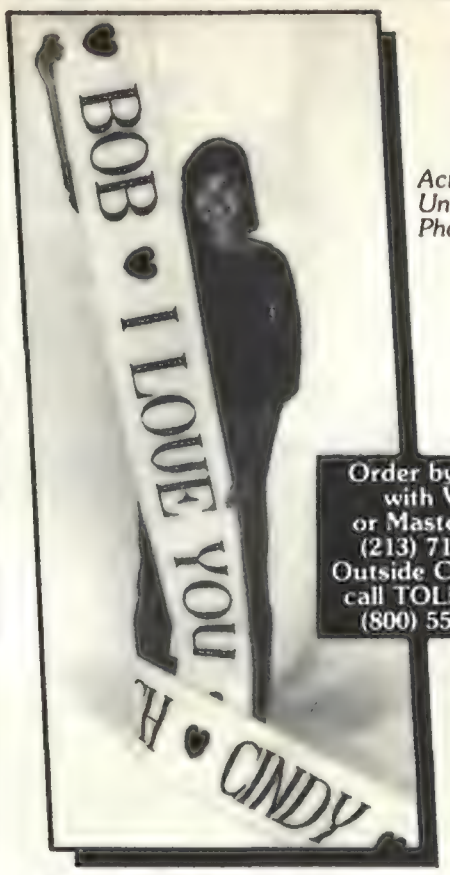


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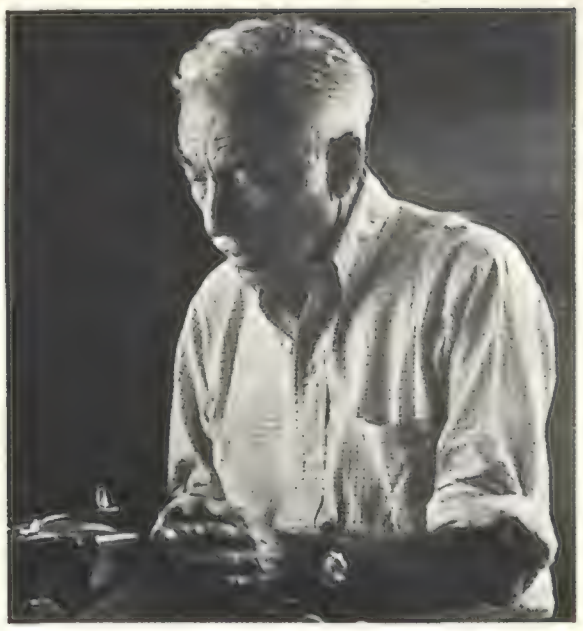

E. B. White works in his boathouse in Maine as he has for the past 35 years.

was superficial, and the fun-loving, good-humored writer who strolled calmly through the halls at *The New Yorker* belied a writer whose angst over his craft and the course of his career caused several breakdowns. Throughout his life, White has been a worrier, sometimes a recluse, always an ardent hypochondriac given to sieges of depression and psychosomatic illness. Once, after a bout of dizziness, when he was tested for glucose tolerance, he wrote to a physician-friend, "They ought to test me for people tolerance, or events tolerance, or gin tolerance, or human stupidity tolerance."

The spirit most akin to White, Elledge tells us, is Henry David Thoreau, and *Walden* is the book White most admires. It is, he once wrote, his "one book . . . and I keep it about me in much the same way one carries a handkerchief—for relief in moments of defluxion or despair." White's despair, loneliness, anxiety have been deep and real, but his farm in Maine has provided the roots he needs, the steady occupation he loves, the attachment to nature that offers solace and satisfaction. Though he long kept an apartment in Manhattan, Elledge clearly implies that he did so to acquiesce to his wife's need for the city's stimulation.

Elledge vividly details White's youth and his years at Cornell (where his teacher was William Strunk, whose book on writing, *The Elements of Style*, he would one day revise and revive). He sensitively portrays his love affair with Katharine Sergeant Angell and their relationship during nearly 50 years of marriage. He discusses White's works without pedantry.

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And he allows White often to speak for himself through excerpts from essays and letters, in the crisp, lucid, witty style that makes him inimitable.

*Linda Simon*
Critic, author of books on Gertrude Stein and Thornton Wilder

*The Owl Papers*
Jonathan Evan Maslow
Drawings by Leonard Baskin
Dutton, $17.95

"The gravest bird's an owl" wrote Scotsman Allan Ramsay two centuries ago. And, he might have added, one of the most gravely misunderstood.

Ramsay isn't cited in *The Owl Papers*, but almost every serious student of the order Strigiformes *is* in this splendid array of short, seasonal essays. An avid reader on matters avian and mythological, this is Maslow's first book. In it he recounts how the owl, through habits rapacious, solitary and nocturnal, has flown swiftly in human history from the familiar to the realm of superstition. It was an owl, the author points out, which perched above Herod Agrippa's throne in Caesarea, an omen that sent him into a fatal swoon. Traditionally, the owl became the pet of Satan, the "Manichaean symbol of evil," the foul fowl that "shriek'd the fatal bellman" for Lady Macbeth.

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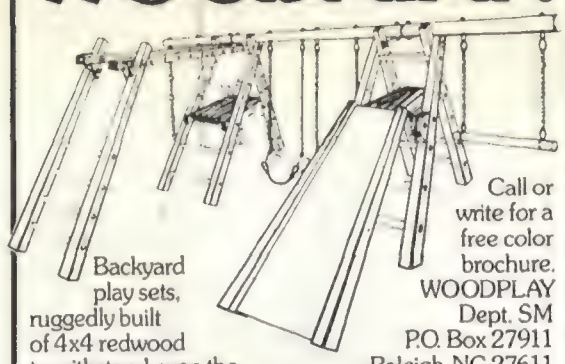

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English pastor and pioneering naturalist Gilbert White, who watched, with watch in hand, owls nesting in the woods of his Selborne parish.

Several of today's most accomplished ethologists have enhanced White's understanding, and our own, while cutting their professional teeth. The Craighead brothers, those gurus of grizzly-bear behavior, first studied the territorial range of Great Horned and Screech owls in Michigan. While a student at Cornell, that preeminent recorder of humpback-whale song, Roger Payne, experimented with Barn owls in total darkness and so established that the species hunts by ear.

Payne's painstaking discoveries and other strange and wondrous facts of owlish adaptation are shared here. How a richness of rods and visual purple (pigment) enables the owl eye to discern forms in one-hundredth the light our dim bulbs require. How the lonesome hunter has evolved a greater sensitivity to the squeals of its rodent quarry than to the hoots of its confreres. How the ratio of wingspan to body weight permits silent pursuit of that prey. How the ice-tong arrangement of powerful owl claws grips the victim. You can't build a better mousetrap.

But Maslow has done much more than assemble research on the hoo, what and where of owls. He has gone after them in the flesh, pulling us along in his wake.

"You snooze, you lose," a local all-night bird bander tells him at Cape May, New Jersey. Owl watching does call for extraordinary patience and stamina, and Maslow has both. He climbs a tall pine in a vain search for a Barred owl couple, and vaults golf-course fences at a gallop to escape feral dogs that interrupt his quest for a Great Horned.

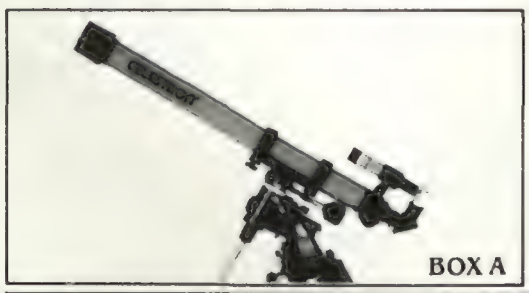
From winter to fall, Maslow follows the birds. He joins a "hawkman" in western Connecticut, a professor of biology in the south of the state and an owl doctor in Manhattan. He travels in the footsteps of owl watchers of a half-century ago to the besmirched Meadowlands of New Jersey, where Charles Urner witnessed Short-eared owls nesting, and to betouristed Martha's Vineyard, where gypsy-moth chronicler Edward Forbush saw them. But the Short-eareds are long gone from that corner of the Garden State, and lately from the Vineyard as well.

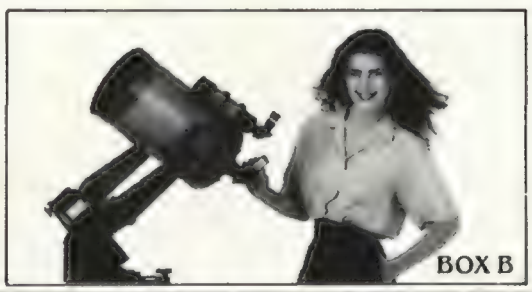
Maslow does find owls, Great Horned and Barred and Short-eared, on his own. He follows leads in the most unappealing places—by burrowing through the dumps in the boroughs of New York. He emerges soiled but with a lively pen, and brings several of the owls to life as vividly as do the dozen shadowy sketches by Leonard Baskin that swoop in and out of the text. He describes the sociable Short-eared and some marsh hawks as standing "like chums outside a factory gate, schmoozing at the change of shifts." The imposing Great Horned bows like a "Japanese ambassador." The tiny Saw-whets he calls the "Mighty Adorables," the "darling of the owls."

As he admits, Jonathan Maslow has discovered nothing new about owls. But he has discovered them wonderfully well, and no doubt they saw much more of him.

*Don Lessem*
Writer and naturalist


# QUESTION: Which of these instruments could open your life to Astronomy—one of our most popular—and most misunderstood—sciences?



Unless you guessed all three, you're missing something—something called the universe. Maybe all stars look alike to you. Look again: It's been estimated that 60% of all "stars" are doing something—sometimes spectacular—on any given night. And every night the show changes. We should know. We're Celestron—the world's foremost maker and marketer of quality optics for astronomy.

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B Not all telescopes look like telescopes. In box B we show you the world-renown Celestron C-8. The price of a quality camera system, the C-8 with its huge 8" primary lens can gather an impressive 791 times more light than your eye. And contrary to another popular misunderstanding, light gathering power—not magnification—is what quality astronomy is all about. The C-8 uses "folded" optics—the light image travels back and forth inside the tube. Result: short, wide and easy-to-handle telescopes of long focal length.

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*From Postwar Expansion to the Electronic Age*
Vol. 3 of *American Baseball*
David Quentin Voight
Pennsylvania State University Press, $18.95

With another baseball season under way, is there anyone out there who doubts its significance? If so, they should heed the prophetic words of the eminent cultural historian Jacques Barzun, who observed, more than 30 years ago, "Whoever wants to know the heart and mind of America had better learn baseball."

As millions of Americans await the unfolding of another pennant race, historians on American college campuses increasingly study its well-documented past. As author-scholar Larry Gerlach says, "Baseball probably offers a truer reflection than any other sport because it has reached out into so many aspects of American life and has involved people of all classes and races."

Now, David Quentin Voight's comprehensive (1,100 pages in a handsome three-volume paperback edition) history of the game may well serve as a basic indispensable text. Its legitimacy is underscored by another famous historian, Allan Nevins, who, in his introduction to the first volume, praised its "true historical thoroughness."

The history of the game, from a gentlemanly leisure pursuit in the mid-19th century through the various golden ages of the sport, the pre-World War I era and the heights of the Depression-era greatness (Babe Ruth, et al.), has been ably documented by Voight. The first two volumes were originally published by the University of Oklahoma Press and the entire three-volume history is now available from Penn State.

From the outset, baseball has been a spectator sport. It drew perhaps the largest crowd in the 19th century (40,000 watched Union soldiers play in 1862), and today more than three million fans watch the current Los Angeles Dodgers play annually. Voight brilliantly surveys all aspects of its evolving years.


# Come to Canada.

The baseball playing done in the major leagues for the period covered in Voight's final volume, from the post-World War II era to the present, has often been obscured by dramatic external events. The expansion westward altered the old order; it suddenly became, among other things, maddening to follow your team when it played on the West Coast. Technology (television, domed stadiums, flashing scoreboards, artificial turf) and the influence of big money on everyone from bonus babies to vastly overpaid utility infielders were among the new realities. But nothing affected the quality of play more spectacularly than the sudden appearance of black and Hispanic players.

Under Branch Rickey's leadership, baseball finally faced the great dichotomy in the American pastime; while the only thing that really counted was pure ability demonstrated on the field, many players who had the ability were not given the opportunity to play.

After two chapters that detail the American and National League campaigns of the postwar era, Voight rightly focuses on a profile of Jackie Robinson and his precedent-shattering entry into major league baseball. So good were Robinson and other black and Hispanic players (such as Willie Mays, Roberto Clemente, Bob Gibson, Henry Aaron, Frank Robinson—Hall of Famers all) that a legitimate question arises: Should baseball statistics since World War II be given the same credence as those from the years when only white men were allowed to play on the pro teams? A good question (like Eugene McCarthy's observation that perhaps new statistics are in order for games played on artificial turf), which probably will never be settled.

Baseball is a splendid game played without benefit of a clock, without platoons for offense and defense and without much violence except to umpires' ears. Yet for many of us, there is no sport more satisfying. Voight has admirably served both scholarship and an enduring American tradition.

*William Claire*
Former Columbia bull-pen catcher, Washington poet and editor


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AMERICA BORDERS ON THE MAGNIFICENT

Canada

*In America*
Eve Arnold
Knopf, $35

Eve Arnold has by now produced four volumes of photo-essays. Her latest, *In America*, covers almost every aspect of life in this country. Here are workers and artists, derelicts and jet-setters, Haitian immigrants and Ku Klux Klansmen. Clearly the photographer and her editor, Robert Gottlieb of Knopf, had a sort of national anthem of a book in mind when they launched this ambitious project. Fortunately, the result is not so blandly celebratory as it might at first seem.

Arnold's last book, *In China*, examined a subject still exotic for most of us. Who could forget those Buddhist monks sitting rapt in their cloister? Or that boat plying a canal with a knot of swimmers holding on to its stern? Or that landscape of misty terraces and funny-shaped hills, looking for all the world like an extravagant pop-up? All this exoticism conferred a sort of unity: to us these images are akin in their quaintness, though to a Chinese they might well seem rather disparate.

By the same token, a Chinese thumbing through *In America* would probably find everything of a piece. But for an American it is sometimes hard to see how these photos hang together. Arnold, like the accomplished photojournalist she is, homes in on anything that will make a good picture. But too many of these good pictures do not show anything particularly American or contemporary. Some of the images of handsome black folk or factory landscapes, for example, could as easily come from France or Britain. The viewer longs for a specific sensibility to match a specific theme.

If this collection does not work terribly well as a photo essay, however, that is partly because some of the pictures are so special that they stand out from all the rest and from any others you'd be likely to come across. In a real classic, "Hot Springs," six young nude male bathers cavort in a rocky swimming hole. They are caught in a unique and archetypal moment, at once Arcadian and scuzzily modern, as if some puckish choreographer has been there to conjoin the beauty of the setting and the beery horse-

Eve Arnold caught this tableau in a condominium garden in Florida.


Smithsonian

Photographed by Yann Arthus-Bertrand

Seated sculpture is by George Segal.
Behind it is a stabile by Mark Di Suvero.

play of young men. It is wonderful, too, the way their fecklessness is heightened by the contrast of flesh against rough stone. This scene really is wickedly and tenderly and "typically" American.

One of Arnold's problems in this book is her high-minded respect for her subject—that is, for us. Whatever have we done to deserve it? Nowhere as in this country do people so readily can and label themselves, often as generic products. Yet when she decides to accept the leveling vulgarity of life here, she can be very funny. She can actually make us laugh—and wince—as in the grab shot she calls "Mardi Gras." Somewhere in the Vieux Carré in a saturnalian New Orleans, a man with a painted eye and a handful of dollars has been spied adjusting his glasses. He smiles back broadly and falsely. Emblazoned on his forehead is an obscenity whose nastiness works against the smile. In the strong contrasts of light and dark, there is a hint of menace, of a bullying cordiality we can all recognize.

In another photograph, "Motion Picture and Television Home and Hospital," we behold a very old lady sitting at table in a wheelchair. She wears a flower-print dress and foam curlers in her hair. Wearily she rests her cheek against her interlaced hands: the crimson paint on her nails and the pink of the curlers together make a piercingly pathetic study of her wretched condition. This picture has more to say about old age off Beverly Hills Boulevard than you would care to put into words, and a friend of mine found it "intrusive." But just that intrusiveness—that taste for the salt of truth—is what I like most about Eve Arnold. In the past her photographs have been full of migrant workers and civil rights protesters, and no one can fault her for lacking compassion. Yet beneath the compassionate veteran newslady lurks that most down-home of creatures, the blunt grandmother. Sometimes she even seems to be saying something rather rude—that innocence inheres in these people regardless of what they have done or what has been done to them. Would she were ruder more often!

*Dan Hofstadter*
New York art critic

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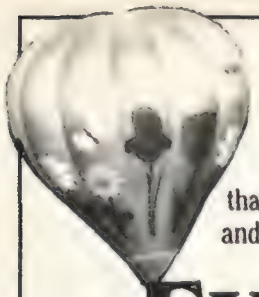

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# *Additional reading*

**Hazardous materials** (p. 44)

*Transportation of Hazardous Materials: Toward a National Strategy* (2 vols.), Transportation Research Board, National Academy of Sciences (Washington, D.C.), 1983

*Community Teamwork: Working Together to Promote Hazardous Materials Transportation Safety. A Guide for Local Officials,* Department of Transportation (Washington, D.C.), 1983

*Hazardous Waste in America* by Lester L. Brown, Samuel F. Epstein and Carl Pope, Sierra Club/Random House, 1982

**James McNeill Whistler** (p. 56)

*James McNeill Whistler at the Freer Gallery of Art* by David Park Curry, Norton, 1984

*The Paintings of James McNeill Whistler* by Andrew McLaren Young, Margaret MacDonald and Robin Spencer, Yale University Press, 1980

*The Lithographs of James McNeill Whistler* (exhibition catalog), Smithsonian Institution Traveling Exhibition Service (SITES), 1984

**Least terns** (p. 68)

*Life Histories of North American Birds of Prey* by Arthur C. Bent (2 vols.), Dover, 1958

*Spirit of Survival: A Natural and Personal History of Terns* by John Hay, Dutton, 1974

"Some aspects of the nesting ecology of Least Terns on the Mississippi Gulf Coast" by J. A. Jackson, *Mississippi Kite,* December 1976

**Word games** (p. 78)

*A Pleasure in Words* by Eugene T. Maleska, Simon & Schuster, 1981


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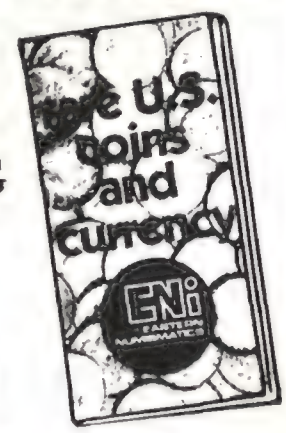


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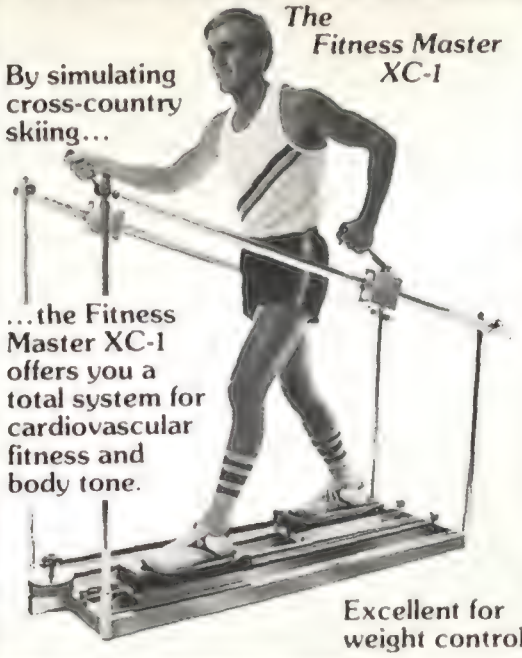
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*The Joy of Lex* by Gyles Brandreth, Morrow, 1980
*Word Play* by Joseph T. Shipley, Hawthorn Books (New York), 1972
*Mrs. Byrne's Dictionary of Unusual, Obscure, and Preposterous Words* by Josefa Heifetz Byrne, University Books (Secaucus, New Jersey), 1974

**Amazon gold rush** (p. 88)

"The Treasure of Serra Pelada," *Life*, December 1980
"Gold Fever Lures Thousands to Amazon" by Warren Hoge, *New York Times*, October 3, 1980

**Gary Larson** (p. 112)

*The Far Side* by Gary Larson, Andrews and McMeel (Kansas City), 1982
*Beyond the Far Side* by Gary Larson, Andrews and McMeel, 1983

**Clark brothers** (p. 122)

*A Capitalist Romance: Singer and the Sewing Machine* by Ruth Brandon, Lippincott, 1977
*Cooperstown* by Louis C. Jones, New York State Historical Association, 1982

**Lichens** (p. 134)

*The Vanishing Lichens* by David Richardson, Hafner Press (New York), 1974
*How to know the lichens* by Mason E. Hale, W. C. Brown (Dubuque), 1969

**George Washington** (p. 144)

*George Washington: The Forge of Experience, 1732-1775* by James Thomas Flexner, Little, Brown, 1965
*George Washington: In the American Revolution, 1775-1783* by James Thomas Flexner, Little, Brown, 1967
*Journal of George Washington*, edited by James R. Short and Thaddeus W. Tate jr., University Press of Virginia, 1963

**John Peabody Harrington** (p. 153)

*Encounter with an Angry God* by Carobeth Laird, Malki Museum Press (Banning, California), 1975
*Breath of the Sun: Life in Early California as told by a Chumash Indian, Fernando Librado, to John P. Harrington*, edited by Travis Hudson, Malki Museum Press, 1979

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Which Buddhas are antiques? (p. 109)
The two largest: center, lower right.

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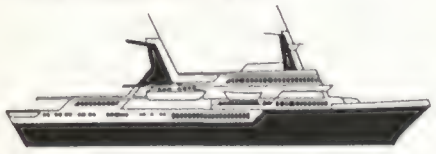

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# *Smithsonian highlights*

For one week this month, visitors to the Mall can get a foretaste of summer evenings spent in the museums. From April 15 through 21, the National Air and Space Museum will remain open until 9 P.M. while the Hirshhorn Museum & Sculpture Garden, the Museums of American and Natural History, and the castle will keep their doors open until 7:30.

### Special April exhibits and events

**Hirshhorn Museum & Sculpture Garden**
*Drawings: 1974-1984* (through May 13) Work from the past decade by 30 artists.
*German Expressionist Sculpture* (April 4-June 17) First major exhibition to examine little-known but vital development of this movement's sculpture.

**Anacostia Neighborhood Museum**
*Black Wings* (April 1-August 5) Describes role of black Americans in aviation.

**Renwick Gallery**
*Harvey Littleton* (through September 3) Retrospective includes 100 works in ceramic and glass. See *Highlights continued.*

**Freer Gallery of Art**
*Chinese Paintings* (runs indefinitely) Selection of 30 Sung through Ch'ing Dynasty paintings includes two new acquisitions by Tao-chi.
*Japanese Fans* (April 6-runs indefinitely) Complements *Fanfare* exhibition at Renwick Gallery.
*Red, Yellow and Blue: The Story of Three Asian Pigments* (April 10; 8:30 P.M.) Lecture by Elisabeth West FitzHugh.

**Cooper-Hewitt Museum** (New York)
*Finished in Beauty: Southwest Indian Silver* (April 17-July 8) Mostly Navajo, Zuni.
*Circles of the World: Traditional Art of the Plains Indians* (April 24-July 15) More than 150 works, most from Denver Art Museum collection.


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**National Air and Space Museum**
*Golden Age of Flight* (April 5-runs indefinitely) Major new gallery focuses on period between the two World Wars.
*Wings and Things: Aviation Open House* (April 28, 29; 10 A.M.-3 P.M.; Paul E. Garber Facility, Suitland, Maryland) Special activities include restoration demonstrations, self-guided tours.
*Astronomy and Astrophysics in the 1980s and 1990s* (April 11; 7:30 P.M.) Lecture by George Field.
*Poetry and the Stars* (April 7; 9 A.M.) Monthly sky lecture.

**National Museum of Natural History**
*Roger Tory Peterson: The 50th Anniversary of* A Field Guide to the Birds (April 27-September 3) Original full-color plates.
*Exploring Microspace* (through July 15).
*Fossil Birds and the Polynesian Conquest of Nature in the Pacific* (April 13; noon; Baird Auditorium) Lecture by NMNH curator Storrs L. Olson.

**National Portrait Gallery**
*Variations: Musicians in Caricature, 1920-1960* (April 14-September 16).
*Adventurous Pursuits: Americans and the China Trade, 1784-1844* (through July 8).

**National Zoological Park**
*Australasian Exhibit* (opens mid-April) New exhibit in Small Mammal House will feature tree kangaroos, echidnas and other unusual species.

## Exhibition catalogs

Catalogs available at this time include:
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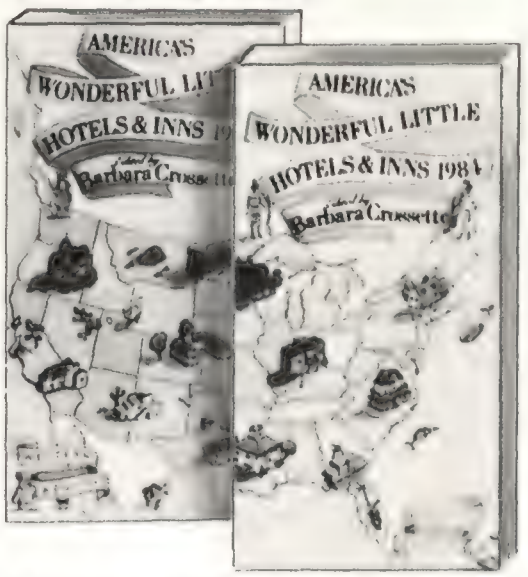


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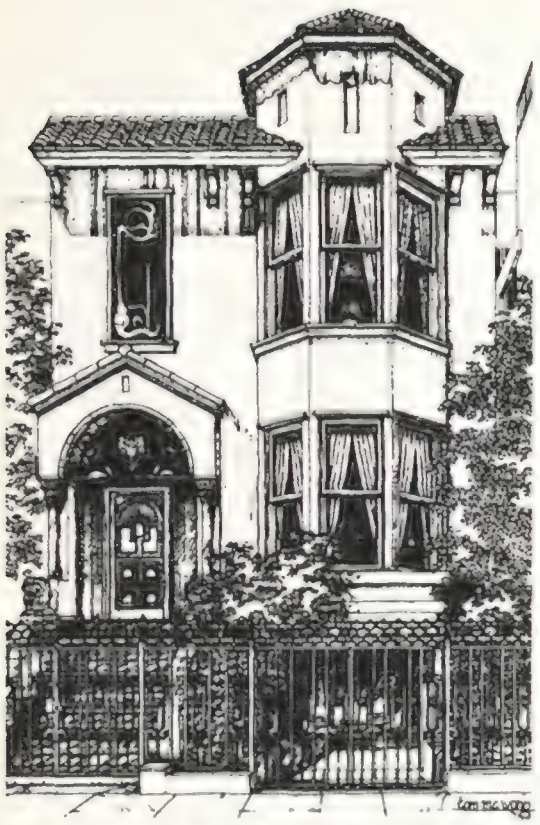

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The Washington Craft Show, sponsored by the Women's Committee of the Smithsonian Associates, will be held at the Departmental Auditorium, 1301 Constitution Avenue, N.W., Washington, D.C., on April 27-29. The hours will be 10 A.M. to 6 P.M. Admission is $4.50 ($3.50 for Smithsonian Associates, seniors over 65 and children under 12). Group advance sales may be arranged by writing to Mrs. J. Edward Day, 5804 Brookside Drive, Chevy Chase, MD 20815.

The show will be preceded by a fund-raising preview on April 26 from 6:30 P.M. to 8:30 P.M. By invitation, the tickets are $75 per person. Invitations may be obtained by writing to Women's Committee, A&I 3101, Smithsonian, Washingon, D.C. 20560. Att: Betty Wood.

## Smithsonian on the air

*Radio Smithsonian*: Topics on this weekly half-hour program include the historic trade between America and China; the Metropolitan Opera; black American scientists.

*Smithsonian Galaxy*: Short radio features explore history, science, art.

*Here at the Smithsonian. . .*: Two-minute TV features look at atomic clockmaking and African Islamic art.

*Smithsonian World:* hour-long TV special on PBS, April 11, "Designs for Living," is part of series on the Smithsonian.

To find out what stations in your area carry these radio and TV programs, write: Office of Telecommunications, NMNH Room C222B, Smithsonian, Washington, D.C. 20560.

## Resident Associate events

To become a Resident Associate, or to find out about the many other activities presented monthly, or for fee and ticket information, call 357-3030. Here are some April events:

*Baubles, Bangles, and Beads* (April 6; 7 P.M.) Gala evening with jazz concert, buffet dinner, gems displayed on live models.

*Djimo Kouyate in Concert* (April 7; 8 P.M.).

*Great Moments in Dance* (Seven Monday evenings beginning April 23) Series includes demonstrations by dancers, films, Washington Ballet performance.

*The New Washington House* (Six Tuesday evenings beginning April 24).

*Roger Tory Peterson* (April 27; 7:30 P.M.) Author of *A Field Guide to the Birds* presents lecture, followed by reception.


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### Regional Events Program

Associates in the Dakotas and Minnesota will have the opportunity to meet Smithsonian curators and scientists when the Regional Events Program visits Rapid City, Sioux Falls, Fargo and Moorhead on April 13-17. The series features lectures on the Golden Age of Flight, American family folklore and fossil identification. A series will also be held in Albuquerque May 1-9; it will include lectures on plate tectonics, contemporary sculpture and crafts and World War II aviation. For further information, write: Regional Events Program, A&I 1208, Smithsonian, Washington, D.C. 20560.

### Smithsonian Institution Traveling Exhibition Service

SITES circulates exhibitions to hundreds of cities outside Washington. To sponsor a show in your community, write: SITES, Smithsonian, Washington, D.C. 20560. Here are some April exhibits:
College Park, Maryland (April 21-June 3) *Master European Drawings from the National Gallery of Ireland*, University of Maryland Art Gallery.
New York City (April 16-August 26) *The Precious Legacy: Judaic Treasures from the Czechoslovak State Collections*, Jewish Museum.
Galveston, Texas (April 14-May 13) *Images of China: East and West*, Rosenberg Library.
Frankfort, Kentucky (April 14-May 13) *Out of Africa*, Blazer Library, Kentucky State University.
Miami, Florida (April 20-May 25) *Transformed Houses*, Foundation of Southern Florida Black Archives.

### Membership benefits when visiting the Smithsonian

To help you decide which treasure-filled area of the Smithsonian to visit, highlights of the 13 museums and the Zoo are described in a daily slide/lecture orientation. Details about this and other membership benefits, including discounts in Smithsonian shops and dining in the Court, are available 10 A.M. to 4 P.M. daily at the Associates' Reception Desk in the original Smithsonian Institution Building, the castle. Helpful printed materials are also available.

Planning ahead can greatly enhance your visit; request a free previsit packet by postcard or by phone: Associates' Reception Center, Smithsonian, Washington, D.C. 20560, (202) 357-2700; for hearing impaired, TDD (202) 357-1729.


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# Littleton glass at the Renwick

Born in Corning, New York, the son of a physicist who worked at the huge glassworks there, Harvey Littleton grew up fascinated with glass. He wanted to make sculptures with it in a studio, a seemingly impossible dream because of the mighty furnaces that would be required. So he became a potter, gaining international recognition—but in the meantime he buttonholed anyone who would listen to his ideas about glass.

The breakthrough came in 1962 at the Toledo Museum of Art, where he and Dominick Labino of Johns Manville teamed up to offer a pair of seminars on studio glassblowing. In a garage on the museum grounds, the group developed a studio furnace and new working techniques. Within a decade, nearly 100 glass programs sprang up around the country.

Today, Littleton, who is regarded as the father of the modern Studio Glass Movement, works glass full-time in his North Carolina studio. His rich and varied oeuvre can now be savored in a traveling exhibition, with more than 100 works in ceramic and glass, organized by the High Museum of Art. It is at the Renwick Gallery through September 3.

For Littleton, this retrospective is a liberating experience. "It sums up all my life's work to date," he says. "Now I'm going to have more fun with glass."
*Constance Bond*

For *Glass Spectrum*, 1974, Littleton nested stained-glass strips in aluminum.

At right, stoneware bowl typifies ceramics Littleton did before glass.

Both shapes of *Red Curvilinear Pair* are built up with 18 layers of glass.

*Fallen Purple* loops bent of their own weight while still on blowpipe.

Vase was blown with melted industrial marbles ordinarily used for fiberglass.

Littleton ranges from organic to hard-edge in *Sympathy* (above) and *Origami 4* (below), an intaglio from glass plate.

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## Domestic Study Tours

**Crafts Today** April 26-29: "Glorious Glass" —Come to the Smithsonian for the 1984 Forum on 20th-Century American Glass.

**Civil War in Virginia** May 2-11: Explore historic homes, towns and battlefields during springtime in the Shenandoahs.

**California Dream** May 17-25: Visit San Francisco, Sacramento and Carmel, focusing on early history of the state.

**Kentucky** May 17-25: Visit historic homes in Louisville, Lexington and Shakertown, plus renowned craft centers in Berea.

**Crow Canyon Archaeology** May 20-27 or August 5-12: Join archaeologists near Mesa Verde, Colorado, for a dig at an ancient Indian site.

**Treasure-Houses of Early America** May 31-June 7: Private tours of Winterthur and other historic homes and museums around Wilmington, Delaware.

**Connecticut Antiques** June 17-24: Tour New England's scenic countryside visiting 18th-century villages, antique collections and private homes.

**Family Weekend** June 27-July 1: A special program to share the treasures of the Smithsonian and the monuments of the capital with your children ages 7 to 14.

**Waterton-Glacier International Peace** July 17-28: Hike through spectacular Rocky Mountain scenery with overnights at park lodges and chalets.

**Journey on the Green River** July 20-30: Master the skills of white-water river running through Utah's Desolation and Gray Canyons.

**Geology in the Colorado Rockies** July 29-August 4: Study two billion years of Earth's history in the Pikes Peak area.

**Yosemite's High Country** August 4-11: From a base camp near Tuolumne Meadows explore the remote areas of the Sierras.

**Middle Fork** August 5-12: A thrilling white-water raft trip down Idaho's beautiful Salmon River.

**Colorado Railroad and Mining History** August 10-18: Ride steam trains on scenic mountain railroads, sleep in Victorian inns and explore old mining towns.

**Along the Bozeman Trail** August 18-25: Trace the history of the Indian wars in Montana and Wyoming.

**Grand Canyon** August 24-September 3: A sublime spectacle seen on a raft trip down the Colorado River.

**Jackson Hole: Cowboy Country** August 26-September 2: Visit a working cattle ranch to learn the myth and reality of the American cowboy.

**Coming in September:** Hike through Bryce and Zion, sail around Puget Sound between Vancouver and Victoria or visit New England seaports.

**Washington "Anytime Weekend":** Plan a spring weekend to visit the Smithsonian museums. Package includes hotels, meals and exclusive tour of Smithsonian castle. Reservation and payment must be received at least ten days prior to arrival.

## Foreign Study Tours

*These tours range in size from small group experiences to charter adventures and vary in price from low-cost to deluxe, depending on the type of travel, destination and length of trip:*

**People's Republic of China, 1984:** Retrace the Silk Route, climb China's sacred peaks, cruise the Grand Canal or Yangtze River, explore back roads, study decorative arts and antiques, or journey by train through the countryside. Exclusive tours are led by a Sinologist and include intensive pretour briefing.

**London and the English Countryside** April 29-May 13: Delve into London's 2,000-year heritage with lectures, walking tours and theater followed by travel excursions through England's spring countryside.

**History and Romance of the Rhine** May 14-29: Following a program in Zurich and Basel, embark on our chartered ship for a seven-day study voyage to the great castles and cathedrals on the Rhine.

**Siberia and Beyond** June 10-July 3: Take the legendary train across beautiful eastern Siberia followed by a choice of travel seminars to seldom-visited Outer Mongolia, exotic Central Asia or the Czars' cities of Moscow and Leningrad.

**Greece** June 16-July 1: A full program in Athens is followed by visits to the sites of ancient civilizations in central Greece and Thessaloniki.

**Cotswold Countryside** June 24-July 8 or July 8-22: Stay in Cirencester, in the midst of England's ancient green hills.

**Iceland** July 24-August 7: Travel a rugged terrain of glaciers, hot springs and majestic waterfalls. Visit outpost fishing and farming communities to meet today's pioneers of the Far North.

**Island World of Britain** July 30-August 13: From Southampton, circumnavigate Great Britain aboard the *Argonaut.*

**Scandinavia and the Baltic** August 4-18: Begin in Copenhagen, gateway to the Baltic, then board the *Illiria* for port calls at enchanting Baltic islands and the impressive cities of Tallinn, Leningrad, Helsinki and Stockholm.

**Kenya** August 9-26: Observe wildlife on exciting safari to Masai Mara, Amboseli, Lake Nakuru, Kilaguni and Lewa Downs.

**Odyssey of Flight** September 4-17: National Air and Space Museum experts lead a grand tour of aviation-related activities in England, Germany and Switzerland. Includes the Farnborough International Aerospace Exhibition.

**Oxford/Smithsonian Seminar** September 14-29: Attend classes, lectures and field trips led by Oxford faculty while enjoying the special ambience of this famous university and town.

**The Ancient World of Peru** September 29-October 14: Visit Lima, Cuzco, Indian markets and amazing Machu Picchu.

**Rouen and the Norman Countryside** October 6-21: The ancient city of Rouen, capital of lush Normandy, provides a superb setting for walking tours, museum visits and special excursions nearby.

**Coming in October:** Egypt and the Nile, British Canals and Countryside, Istanbul and Beyond, Greek Islands Study Voyage.

**Write National Associates, A&I 1278 Smithsonian Institution, Washington, D.C. 20560 or call (202) 357-2477 for specific tour brochures**

# in Washington

## Selected Studies Seminars

Enjoy the treasures of the Smithsonian in unique, popular programs and special behind-the-scenes tours. Choose from:

**Gardens by Design** April 29-May 4: The director of the Smithsonian's Office of Horticulture and other experts focus on the secrets of successful gardens. Includes tours during the height of spring's profusion at historic properties, estates, botanical collections and greenhouses with the resident horticulturist or landscape superintendent.

**In Tucson, Arizona**
**The New Astronomies** May 6-11 or May 13-18: The world's largest concentration of observatories is on top of spectacular mountain peaks in southern Arizona. Tucson, the "Astronomy Capital of the World," is famous for the Multiple Mirror Telescope of the Smithsonian and the University of Arizona, and the world's largest observatory, Kitt Peak National Observatory, funded by the National Science Foundation. Spend a memorable spring week meeting the directors and staffs who share their latest research in tours of these observatories as well as the McMath Solar Telescope, which provides the largest, clearest and steadiest view of the sun now possible.

**18th-Century French Art** July 15-20: An unprecedented exhibition at the National Gallery of Art of the wistfully beautiful art of Watteau, highlighted by the inclusion of his greatest works from the Louvre and West Berlin, will be the focal point of this seminar taught by William Kloss on the art of France in the Age of Voltaire.

**History of American Architecture** September 30-October 5: A colorful kaleidoscope of the diversity of styles of the many gifted and fascinating genius/architects who have created a unique architectural history of great beauty, tradition and importance. Highlights include a special all-day trip to Frank Lloyd Wright's masterpiece, Fallingwater.

**Coming in the fall:**

**Digging up Rome** October 14-19
**Aircraft Restoration** October 21-25
**Treasures of Chinese Art** November 4-9
**Golden Age of the Aztecs** November 11-16

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*By James A. Cox*

# *Where are the Spads of Yesteryear?*

Having reached a certain age, I often find myself victimized by an out-of-control time machine. All it takes is a haunting whiff from memory's attic, and there I go, spinning back to childhood.

Two things juxtaposed did it this time. One was a news report that a handful of survivors of the Lafayette Flying Corps, those intrepid young American volunteers who wanted to challenge the infamous Red Baron in 1916, had gathered at the U.S. Air Force Academy in Colorado to celebrate *La Dernière Sortie*—their Last Reunion. The other was learning that my son-in-law Steve had somewhat prematurely purchased—for my 5-month-old grandson—a kit for building a plastic Boeing 747 with a three-foot wingspan.

Back I went, tumbling over the decades. I was 12, and during that year I constructed—after a fashion—models of every aircraft flown in the Great War: Spads and Nieuports and Fokkers and Sopwith Camels. . . .

Steve had to pay $15.95, discount price, for his plastic model. The models I made cost a dime. For your ten cents you got a box with a dogfight cover in color, construction plans, a chunk of balsa wood for the fuselage, balsa sheets with wings and elevators imprinted on them, slivers of bamboo for struts, nifty wooden wheels, a tiny tin propeller, sandpaper and a little bottle of (sometimes) dried-out airplane glue. The manufacturer, unbelievably generous, also included a sheet of paper containing all the national insignia in full color: American stars, British bull's-eyes, German crosses and French tricolors. All of them, even though you had bought only one model!

To slice the wings from the balsa sheets and whittle the fuselage into shape, you used a piece of broken, double-edged razor blade. Why not a safer single-edged blade? I don't know. I just followed the instructions. I remember that my fingers, especially the right thumb, were patchworked with hundreds of tiny cuts. If the G-men had tried to fingerprint me, I'd have driven them nuts. And I remember the indescribable sensation of peeling dried airplane glue from those same work-worn fingers with my teeth. Soap and water had no effect on model glue, and I never managed to get it all off at one time. For weeks my fingers could have belonged to a leper who worked as a gardener in a plot of broken glass.

My first model was a French Nieuport. This aircraft preceded the famous Spad and was a fine machine except for one rather serious defect: when you went into a power dive, the fabric covering its wings sometimes peeled off. This was pretty rough, especially if you happened to be 20 miles inside enemy lines with six or seven Boches on your tail. The reason I am able to toss out little gems of knowledge such as this is that for a period I read *Falcons of France*, by Charles Nordhoff and James Norman Hall, at least once every three months. Hall was a member of the Lafayette Flying Corps.

Finishing my first masterpiece, I zoomed outside and flew it by legs and mouth to Red Werder's house, a couple of blocks away. Red had bought his first model, too, also a Nieuport, and we had agreed to compare results.

Red couldn't come out because he was sick, but he stood at the screened front window while I squatted on the porch. He looked at my model and sniffed. "Didn't you sand it at *all*?" he asked.

I was stung. Sandpapering is for dull people. "I did it that way on purpose," I cried. "This plane just got back from a dogfight. Boy, what a beating it took! Seven Boches dove at me out of the sun. . . ."

Red disappeared. A moment later he was back, and I gasped. Not because his model was sanded silky smooth. I hardly noticed that. I was appalled by the terrible mistake Red had made. He had used *all* the different insignia. There were German crosses on the wing tops, American stars on the bottoms, bull's-eyes on the fuselage, tricolors on the elevators. It was awful. But I tried to be big about it. This was Red's first model.

"Red," I said gently, "you got it all screwed up. The Nieuport's a French plane. You ain't supposed to put *all* the insignia on it."

Red looked me square in the eye. "That's what my plans said to do."

"You're nuts! I got the same plane and my plans don't say that. Besides, I read all about Nieuports in *Falcons of*. . . ."

"This ain't no Nieuport," Red said, matter-of-factly. "This is a German Spad."

"You're crazy!" I shouted. "The Spad's a French plane. There's no such thing as a German Spad!"

"There is if the Germans capture one and use it themselves," Red declared triumphantly.

"Oh, shut up!" I stomped off the porch. Sad. I considered Red Werder my best friend, but I never felt the same about him after that. Any guy who would let the Germans capture a French Spad and use it against the Allies—that was not only dumb, it was practically treason!

Maybe you think that was just a kid's overreaction? Well, go and ask any ex-model builder. Or any of those old men who were itching to take on the Red Baron in 1916. Go on, I dare you!

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